Operation

Software

OnCue® Software

Version 3.0 and higher
for the following generator set controllers:

RDC/DC
RDC2/DC2
VSC

Generator Set Models:

6VSG
14/20RES
14/20RESL
14/20RESA
14/20RESAL
38RCL
48RCL

ISO 9001
KOHLER POWER SYSTEMS
NATIONALLY REGISTERED

KOHLER® POWER SYSTEMS

TP-6796 6/12d

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IMPORTANT SAFETY INSTRUCTIONS. Electromechanical equipment, including generator sets and accessories, can cause bodily harm and pose life-threatening danger when improperly installed, operated, or maintained. To prevent accidents be aware of potential dangers and act safely. Read and follow all safety precautions and instructions. SAVE THESE INSTRUCTIONS.

This manual has several types of safety precautions and instructions: Danger, Warning, Caution, and Notice.

⚠ DANGER

Danger indicates the presence of a hazard that ***will cause severe personal injury, death***, or ***substantial property damage***.

⚠ WARNING

Warning indicates the presence of a hazard that ***can cause severe personal injury, death,*** or ***substantial property damage***.

⚠ CAUTION

Caution indicates the presence of a hazard that ***will*** or ***can cause minor personal injury*** or ***property damage***.

NOTICE

Notice communicates installation, operation, or maintenance information that is safety related but not hazard related.

Safety decals affixed to the equipment in prominent places alert the operator or service technician to potential hazards and explain how to act safely. The decals are shown throughout this publication to improve operator recognition. Replace missing or damaged decals.

Accidental Starting

⚠ WARNING

Accidental starting.
Can cause severe injury or death.

Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or equipment connected to the set, disable the generator set as follows: (1) Press the generator set off/reset button to shut down the generator set. (2) Disconnect the power to the battery charger, if equipped. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent the starting of the generator set by the remote start/stop switch.

Hazardous Voltage/ Moving Parts

⚠ DANGER

Hazardous voltage.
Will cause severe injury or death.

Disconnect all power sources before opening the enclosure.

Short circuits. Hazardous voltage/current can cause severe injury or death. Short circuits can cause bodily injury and/or equipment damage**.** Do not contact electrical connections with tools or jewelry while making adjustments or repairs. Remove all jewelry before servicing the equipment.

NOTICE

Electrostatic discharge damage. Electrostatic discharge (ESD) damages electronic circuit boards. Prevent electrostatic discharge damage by wearing an approved grounding wrist strap when handling electronic circuit boards or integrated circuits. An approved grounding wrist strap provides a high resistance (about 1 megohm), *not a direct short*, to ground.

Notes

This manual provides operation instructions for OnCue® Software Version 3.0 and higher. See Figure 1 for a list of generator set models that use the OnCue software covered in this manual.

Note: The VSC, RDC2, and DC2 controllers require an activation code provided in kit GM81385-KP1.

Note: The RDC and DC controllers must be equipped with the Ethernet option board kit GM62465-KP1. See TT-1566, provided with the kit, for installation instructions.

The OnCue software version number required for each generator set model is also shown in Figure 1. OnCue software with a version number equal to *or higher* than the number shown in the table is required for operation with that generator set model. For example, models that list version 2.0 in the table will also operate with version 3.0 or higher.

Model	Controller	OnCue Software Version Number (x.x or higher)
6VSG	VSC	3.1
14RES	RDC	2.0
14RESL	DC	2.0
14RESA	RDC2	3.0
14RESAL	DC2	3.0
20RES	RDC	2.0
20RESL	DC	2.0
20RESA	RDC2	3.0
20RESAL	DC2	3.0
38RCL	RDC2	3.2
48RCL	RDC2	3.0

Figure 1 Generator Set Models and OnCue Software Version Numbers

OnCue® software version 1 is available for selected Residential generator set models equipped with the ADC 2100 or ADC-RES controller. See TP-6616, OnCue Software Operation Manual.

Information in this publication represents data available at the time of print. Kohler Co. reserves the right to change this publication and the products represented without notice and without any obligation or liability whatsoever.

Read this manual and carefully follow all procedures and safety precautions to ensure proper equipment operation and to avoid bodily injury. Read and follow the Safety Precautions and Instructions section at the beginning of this manual. Keep this manual with the equipment for future reference.

List of Related Literature

Figure 2 lists related literature.

Literature Type	Part Number
OnCue Specification Sheet	G6-116
OnCue Ethernet Option Board Installation Instructions (RDC/DC only)	TT-1566
Operation Manual, 14/20RES/RESL Generator Set with RDC/DC Controller	TP-6734
Installation Manual, 14/20RESA/RESAL Generator Set with RDC2/DC2 Controller	TP-6803
Operation Manual, 14/20RESA/RESAL Generator Set with RDC2/DC2 Controller	TP-6804
Installation Manual, 38/48RCL Generator Set with RDC2 Controller	TP-6809
Operation Manual, 38/48RCL Generator Set with RDC2 Controller	TP-6810
Installation Manual, 6VSG Generator Set with VSC Controller	TP-6842
Operation Manual, 6VSG Generator Set with VSC Controller	TP-6843

Figure 2 Related Literature

Service Assistance

For professional advice on generator set power requirements and conscientious service, please contact your nearest Kohler distributor or dealer.

- Consult the Yellow Pages under the heading Generators—Electric.
- Visit the Kohler Power Systems website at KohlerPower.com.
- Look at the labels and stickers on your Kohler product or review the appropriate literature or documents included with the product.
- Call toll free in the US and Canada 1-800-544-2444.
- Outside the US and Canada, call the nearest regional office.

Headquarters Europe, Middle East, Africa (EMEA)
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France
Phone: (33) 1 49 178300
Fax: (33) 1 49 178301

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Phone: (65) 6264-6422
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North China Regional Office, Beijing
Phone: (86) 10 6518 7950
(86) 10 6518 7951
(86) 10 6518 7952
Fax: (86) 10 6518 7955

East China Regional Office, Shanghai
Phone: (86) 21 6288 0500
Fax: (86) 21 6288 0550

India, Bangladesh, Sri Lanka
India Regional Office
Bangalore, India
Phone: (91) 80 3366208
(91) 80 3366231
Fax: (91) 80 3315972

Japan, Korea
North Asia Regional Office
Tokyo, Japan
Phone: (813) 3440-4515
Fax: (813) 3440-2727

Latin America
Latin America Regional Office
Lakeland, Florida, USA
Phone: (863) 619-7568
Fax: (863) 701-7131

1.1 System Requirements

OnCue® software is designed to run on a personal computer (PC) connected to the Internet through a cable or DSL modem and an Ethernet router.

The following items are the minimum requirements and recommendations for the computer system and related hardware.

- Personal computer (PC) with Microsoft® Windows® 7, Windows® Vista, or Windows® XP
- 1 GB RAM
- Up to 500 MB of available hard disk space
- “Always-on” Internet service (for example, cable, DSL, or phone line modem connected 24 hours)
- Unused Ethernet port on a switch, router,or modem
- An uninterruptible power supply (UPS) for the modem and router is recommended.
- Network cable for connection to the Ethernet router (not included with the OnCue kit)
- Controller firmware versions shown in Figure 2-24. It may be necessary to update the firmware on the controller. See Section 2.12 for instructions.
- USB cable, male USB A to male mini-B, for updating the controller firmware (see Section 1.11)
- **RDC2, DC2, or VSC only:** RJ45 inline connector and OnCue Activation Code found on the decal, included with the OnCue kit.
- **RDC or DC only:** OnCue Ethernet option board installed on the generator set controller, included with the OnCue kit.

Note: See Section 1.6 for information about security and firewalls.

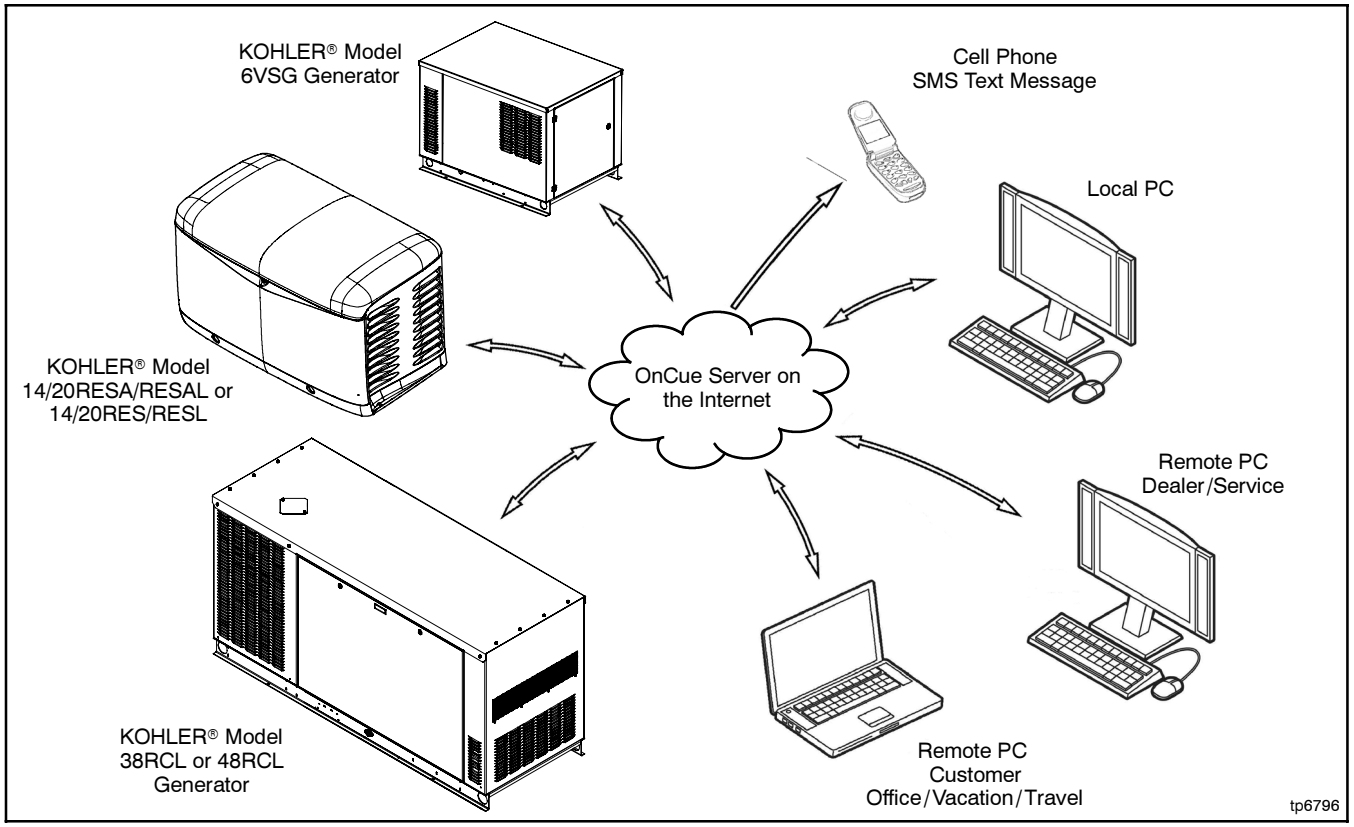


Figure 1-1 Kohler® OnCue® Generator Management System

Microsoft® Windows® and Windows Vista® are registered trademarks of Microsoft Corporation.

1.2 OnCue System Description

1.2.1 RDC2, DC2, and VSC Controllers

The OnCue® Generator Management System is made up of three parts:

- The Kohler® OnCue® PC application (software)
- The Kohler® OnCue® server
- The Kohler® OnCue® Activation Code decal

1.2.2 RDC and DC Controllers

The OnCue Generator Management System is made up of three parts:

- The Kohler® OnCue® PC application (software)
- The Kohler® OnCue® server
- The Kohler® OnCue® Ethernet option board, installed on the generator set controller (see TT-1566)

These parts are described in the following sections.

1.3 Kohler OnCue Software

A personal computer (PC) running Kohler® OnCue® software can communicate with the generator set models listed in the Introduction section to monitor the generator set from any location with Internet access. You can also use the PC to signal the generator set controller to start or stop the engine or reset a fault.

OnCue provides the ability to automatically send email or text messages to notify selected recipients of generator set activity and faults.

The Kohler OnCue software can be installed on one or more personal computers (PCs), enabling monitoring and control of your Kohler generator set from any location with Internet access. You may use OnCue to monitor your generator set from home, work, on vacation, traveling, or anywhere you go with Internet access and a computer. OnCue software may be freely installed on as many computers as you wish.

See Figure 1 on page 7 for the OnCue software version number required for different generator set models and controllers. Download the OnCue software from Kohler Tech Tools, the Kohler dealer portal, or www.kohlerpower.com/oncue as described in Section 1.9.1.

RDC2, DC2, or VSC Controller: The generator set serial number, password, and activation code are required to monitor and control the generator set.

RDC or DC Controller: The generator set serial number and password are required to monitor and control the generator set.

1.4 Kohler OnCue Server

Kohler Power Systems operates an Internet server system used to connect Kohler generator sets with PCs running Kohler® OnCue software.

The Kohler OnCue Server benefits customers, dealers and distributors in several ways. Installation of the OnCue system at the generator set is simple. No IP address programming is required and router adjustments, such as port forwarding and dynamic DNS, are not required.

Kohler OnCue software setup and operation on PCs is also simplified thanks to the Kohler OnCue Server. There is no IP address to configure and there is no longer a requirement to leave OnCue running on an “always on” computer for notifications to work.

All connections to the Kohler OnCue Server are fully encrypted for your protection. See Section 1.7, Privacy Statement.

1.5 OnCue System Kits

1.5.1 RDC2/DC2/VSC Controller

The RDC2, DC2, and VSC generator set controllers are equipped with an Ethernet cable for connection to the Internet. Use the RJ45 inline connector included in the OnCue kit to connect the controller to the customer-provided Ethernet cables connected to the router or modem. See Figure 1-2 or Figure 1-3.

The generator set controller requires a unique 12-digit activation code. The code is on the decal included with the OnCue kit.

Kohler OnCue software will prompt the user to enter the activation code the first time the controller connects to Kohler OnCue Server and a user attempts to connect to it.

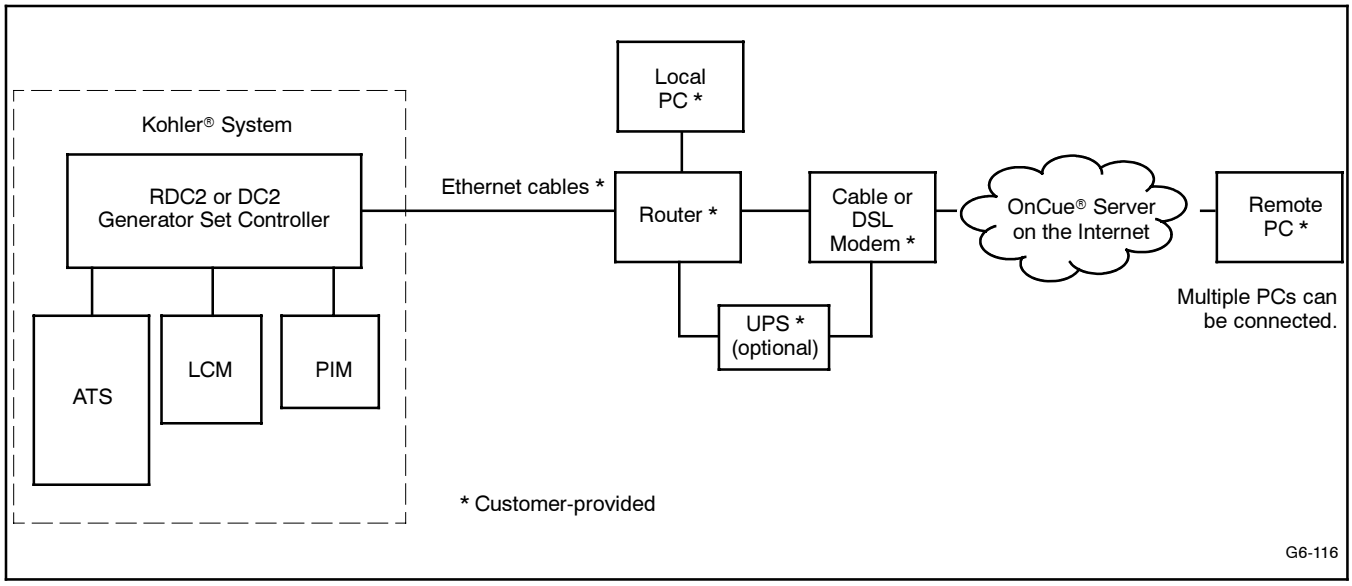


Figure 1-2 Typical Connections for RDC2/DC2 Controller

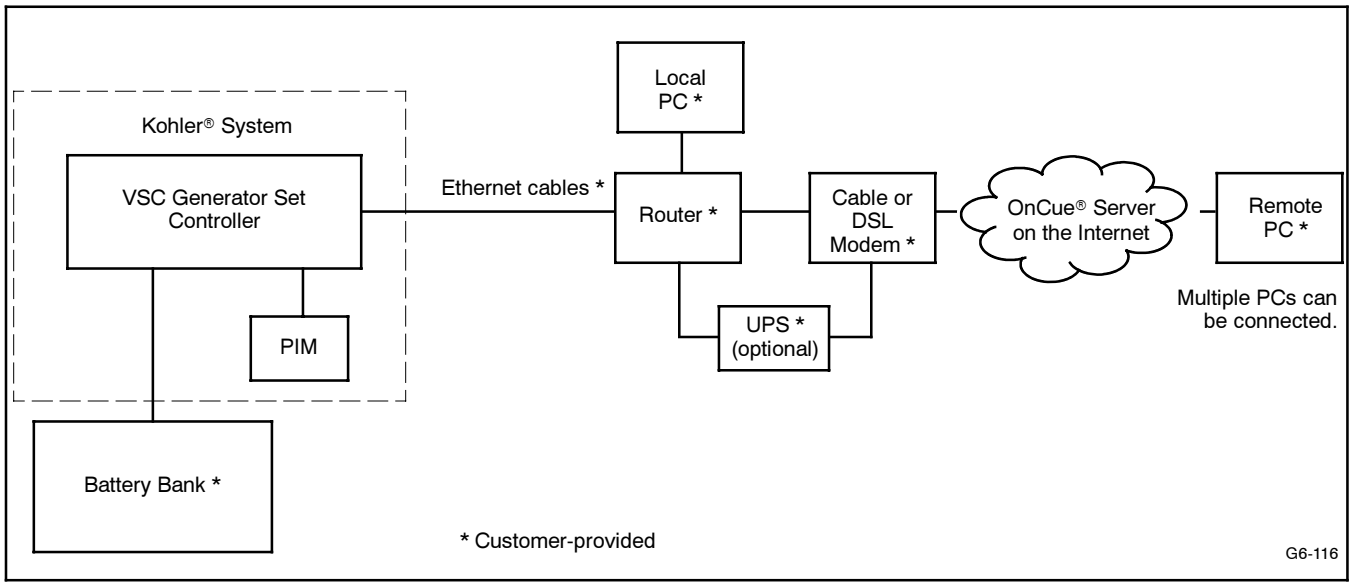


Figure 1-3 Typical Connections for VSC Controller

1.5.2 RDC/DC Controller

The RDC/DC generator set controller must be equipped with the OnCue® Ethernet option board, which allows connection of the generator set to the Internet through a broadband Internet connection. The Ethernet option board is included in the OnCue kit for the RDC/DC controller. See instruction sheet TT-1566, included with the OnCue kit, for Ethernet option board installation and connection instructions. See Figure 1-4.

When the Ethernet board is installed, update the RDC/DC controller firmware and follow the instructions in TT-1566 to record the controller password and generator set serial number for entry into the OnCue program.

In most cases, once the new firmware is uploaded to the controller and the Ethernet board is connected to the customer's router or modem, the controller will automatically connect to the Kohler OnCue Server. Controller settings and network router adjustments are usually not required. The Internet connection between the controller and the Kohler OnCue Server is fully encrypted for your protection.

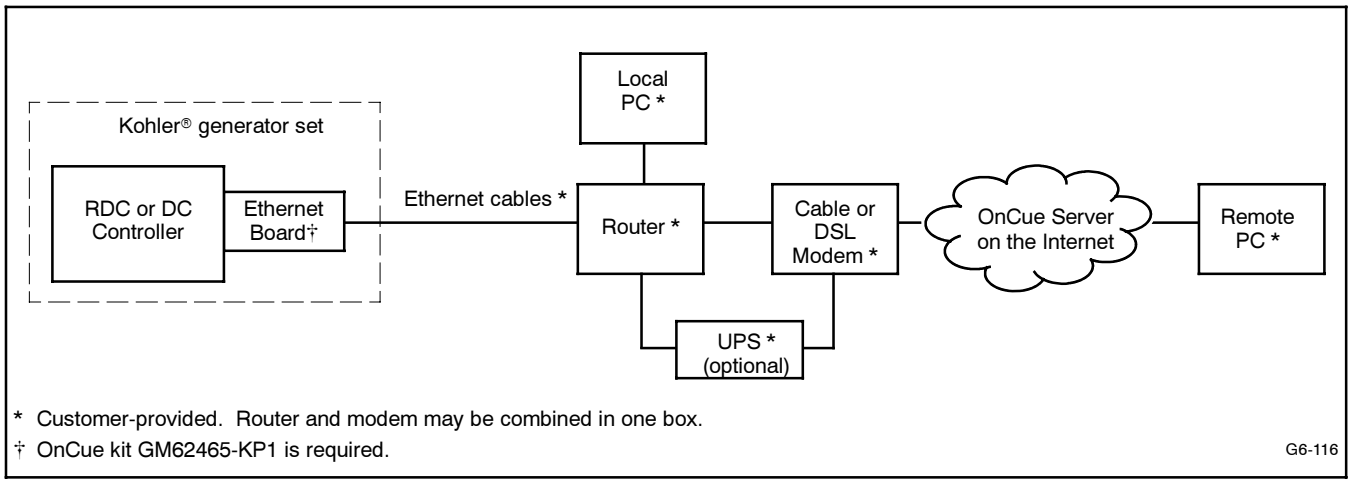


Figure 1-4 Typical Connections for RDC/DC Controller

1.6 Internet Configuration and Security (Firewalls)

When using the OnCue PC application from a remote location behind a firewall, it may be necessary to configure the firewall to open port 808. The firewall may prompt you to allow OnCue to use port 808. You should allow the connection. Contact your network administrator for assistance, if necessary.

When the generator set is connected to an intranet network behind a firewall, for example in a commercial or industrial setting, it may be necessary to configure the firewall to open port 5253 to permit an outbound connection. Contact your network administrator for assistance if necessary.

1.7 Privacy Statement

The OnCue system provides emails or electronic communications updating you on the status of your Kohler® generator and allowing you to monitor the unit remotely. These emails and text messages are routed through a Kohler-hosted server. In order to provide better service, Kohler may retain copies of these emails or electronic communications. These saved communications may include the sender's name, the sender's and recipients' email addresses, and generator information. Kohler Co. takes customer privacy very seriously and will take reasonable measures to keep the information secure.

Except in the limited circumstances described in this paragraph, Kohler Co. will not sell or share the collected information with unaffiliated third parties. We may disclose information if and when we believe it is necessary to comply with any law, rule, court order, or subpoena, or to enforce our legal rights, or to protect our business, property and operations.

Kohler Co. may update this policy at any time. The updated privacy policy will be posted on the Kohler Power Systems website, www.KohlerPower.com. If you have questions or concerns about this policy, please contact Kohler Co. by email at generatorfeedback@kohler.com, or call 1-800-544-2444.

By accepting the software licensing agreement, you are acknowledging your awareness of this privacy policy and granting Kohler Co. permission to save the information identified above.

1.8 OnCue System Installation and Startup

1.8.1 RDC2/DC2/VSC Controller

Installation and use of the Kohler OnCue® Generator Management System includes the following steps. Detailed instructions for each step are given later in this manual.

1. Download the latest version of controller firmware, if necessary, and the OnCue software. See Section 1.9.1 for sites that have the latest software.

2. Install the OnCue software on your PC. Instructions are given in Section 1.9.

3. Use a USB cable to connect your PC to the generator set's RDC2 or DC2 controller and use OnCue to update the firmware on the controller, if necessary. Section Section 2.12 for instructions.

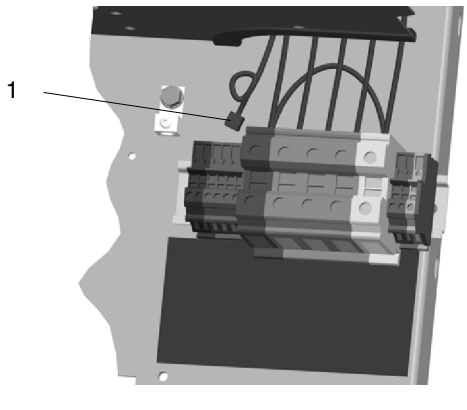
4. Use the RJ45 connector (provided in the kit) to connect the Ethernet cable from the router to the cable in the generator set's customer connection box. See Figure 1-5 or the generator set installation manual.

5. Record the controller password and serial number from the controller as described in Section 2.3.1 or Section 2.3.2, depending on your controller.

6. Start the OnCue program on your PC and use the Add Device command to connect to your generator set over the Internet. Your controller's serial number, password, and OnCue Activation Code are required.

Note: The activation code is only required the first time you connect a generator set to the OnCue system. See Section 2.4.1.

OnCue will remember your generator set and connect to it each time you open the program on your PC.



1. Ethernet cable for OnCue connection

Figure 1-5 Ethernet Connection, RDC2/DC2 (Model 20RESA Shown)

1.8.2 RDC/DC Controller

Installation and use of the Kohler OnCue Management System includes the following steps. Detailed instructions for each step are given in this manual or in TT-1566, Installation Instructions for the Ethernet Option Board, provided with the OnCue kit.

1. Download the latest version of controller firmware and the OnCue software. See Section 1.9.1 for sites that have the latest software.

2. Install the OnCue software on your PC. Instructions are given in Section 1.9.

3. Use a USB cable to connect your PC to the generator set's RDC or DC controller and use OnCue to update the firmware on the controller. See Section 2.12 for instructions.

4. Install the Ethernet option board on the generator set controller. See TT-1566, provided with the OnCue kit, for instructions.

5. Connect the generator set to the Internet using a network cable connected from the Ethernet board to your router or modem.

6. Record the controller password and serial number. See TT-1566 for instructions or Section 2.3.3.

7. Start the OnCue program on your PC and use the Add Device command to connect to your generator set over the Internet. Your controller's serial number and password are required.

OnCue will remember your generator set and connect to it each time you open the program on your PC.

1.9 Software Download and Installation

Determine a location on your computer to save the files for the OnCue software and controller firmware. Create a new folder on your computer, if necessary.

1.9.1 OnCue Software Download

Download the OnCue software from one of these sites:

Kohler® distributors: Download OnCue software from Kohler Tech Tools.

Kohler® dealers who subscribe to the Kohler dealer portal: Download OnCue software from the Kohler dealer portal. Use your user ID and password to log on to mykprc.kohlerco.com and navigate to the software downloads page.

End Users: Download OnCue software from the Kohler website at www.kohlerpower.com/oncue.

1. Navigate to the Software Downloads page.
2. Find OnCue® software and click on the link for program download.
3. Click on “Extract all files.” Follow the instructions on the screen to save the files to the desired directory on your computer.

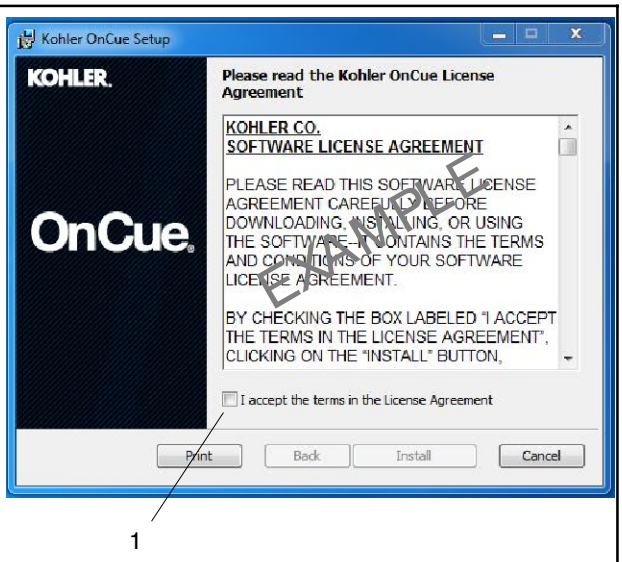
1.9.2 Install OnCue

1. Click on the KohlerOnCue32BitSetup.msi or KohlerOnCue64BitSetup.msi file to start the installation. See Note, below.
2. The software license agreement screen will open. Read the agreement, and then click the check-box to accept the terms. See Figure 1-6.

   Note: See Section 1.7, Privacy Statement.
3. Click Install to proceed. Wait as the program installs on your PC.

   Note: If Microsoft® .NET Framework 4.0 is not installed on the PC, you will be prompted to download it from the Microsoft website. See Section 1.9.3.
4. Click Finish.

Note: Go to this Microsoft website for help in determining whether you have a 32-bit or 64-bit operating system:
http://support.microsoft.com/kb/827218
There are links to this website on TechTools and the dealer portal.


Kohler OnCue Setup
KOHLER
OnCue
Please read the Kohler OnCue License Agreement
KOHLER CO.
SOFTWARE LICENSE AGREEMENT
PLEASE READ THIS SOFTWARE LICENSE AGREEMENT CAREFULLY BEFORE DOWNLOADING, INSTALLING, OR USING THE SOFTWARE. IT CONTAINS THE TERMS AND CONDITIONS OF YOUR SOFTWARE LICENSE AGREEMENT.
BY CHECKING THE BOX LABELED "I ACCEPT THE TERMS IN THE LICENSE AGREEMENT", CLICKING ON THE "INSTALL" BUTTON,
I accept the terms in the License Agreement
Print
Back
Install
Cancel
1
SAMPLE

1. Click here to accept the terms in the license agreement

Figure 1-6 License Agreement Screen

1.9.3 Download and Install the .NET Framework

The OnCue® program requires Microsoft® .NET Framework 4.0. If the required version of the .NET Framework is not installed on the PC, the OnCue installation program will prompt you to download it.

1. Click on the Download button to link to the Microsoft® website. (Internet access is required.)
2. Follow the instructions on the screen to download and install .NET Framework 4.0.

After installing the .NET Framework, it may be necessary to restart your computer. Then start the OnCue installation procedure again as described in Section 1.9.2.

1.10 Controller Firmware

Use Kohler® OnCue or SiteTech™ software to update the controller firmware, if necessary. See Figure 2-24 on page 38 for the required firmware version numbers for each controller. Updating to the latest version of firmware is recommended.

Note: For the RDC/DC controller, firmware version 3.00 or higher is required to enable the OnCue Ethernet Option Board functionality.

- Distributors, download the latest version of the controller firmware from Kohler Tech Tools.
- Dealers, use your user ID and password to log on to the Kohler dealer portal at mykprc.kohlerco.com and navigate to the software downloads page.
- End users can download the software from www.kohlerpower.com/oncue.

For firmware updates, use a USB cable to connect the personal computer directly to the controller. See Section 1.11 for USB cable information. Follow the instructions in Section 2.12, Update Firmware, to load the firmware onto the controller.

1.11 USB Cable (for firmware updates)

For firmware updates, use a USB cable to connect the personal computer directly to the controller. The USB cable must have a male USB A connector on one end and a male mini-B connector on the other. See Figure 1-7. The USB cable must be less than 5 m (16.4 ft.) long.

See Section 2.12 for more information on updating the controller firmware.

Figure 1-7 USB Cable

Notes

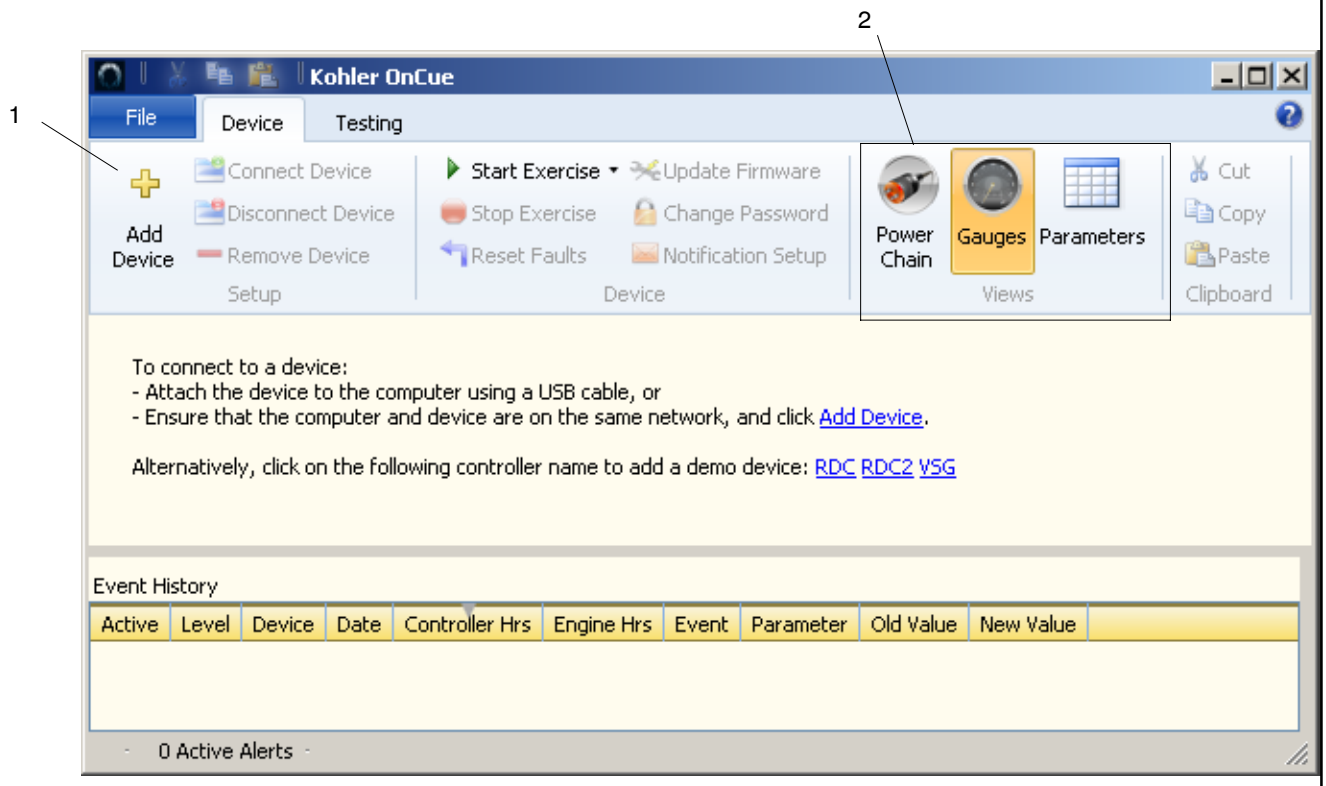
2.1 Introduction

Kohler® OnCue® monitors the generator set and generates messages even when the user interfaces are not displayed on your PC. After the program has been configured to send email and/or text messages, the OnCue server will continue to send messages when the PC is turned off or disconnected from the Internet.

The generator set controller must be in AUTO mode to communicate with OnCue.

2.2 Start OnCue

Start OnCue by clicking on Start > All Programs > Kohler OnCue. The OnCue User Interface Window opens. See Figure 2-1.



1. Add Device command
2. View options (see Section 2.7)

Figure 2-1 OnCue User Interface Window (before connection to a device)

2.3 Controller Password

The generator set controller password is required to make the initial Internet connection with OnCue® software.

2.3.1 RDC2 and VSC Controller Password

For the initial OnCue setup, you will be required to reset the OnCue password on the RDC2 or VSC controller, and then enter it into the OnCue software. To reset the password, follow the instructions in Figure 2-2. See the generator set operation manual for more information.

Note: The password is displayed for only 10 seconds. Be sure to write down the password and serial number.

A new password is generated each time the reset password procedure is performed. If the password is reset after the OnCue system has been set up, the connection will be lost. Enter the new password in OnCue to reconnect.

2.3.2 DC2 Controller Password

To set the OnCue password on the DC2 controller:

1. Press the OFF button and verify that the generator set is not running.
2. Press and hold the Exercise button until Press Again to Reset OnCue PW is displayed.
3. Release the Exercise button and press it again within 5 seconds.

   Note: If the Exercise button is not pressed within 5 seconds, the controller exits the password reset mode.

4. The genset serial number and new password (PW) will be displayed for 10 seconds. Record the password for entry into the OnCue program.

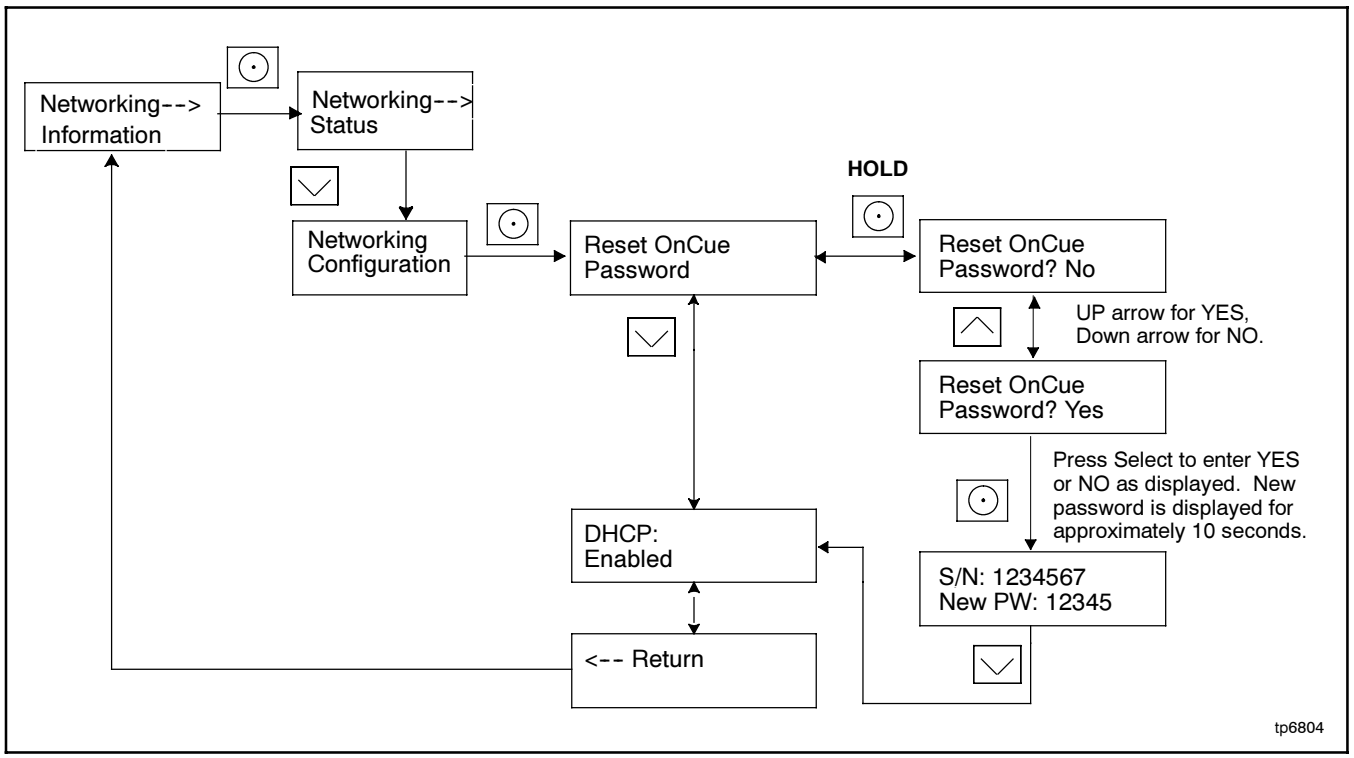

Networking--> Information
Networking--> Status
Networking Configuration
Reset OnCue Password
HOLD
Reset OnCue Password? No
UP arrow for YES, Down arrow for NO.
Reset OnCue Password? Yes
Press Select to enter YES or NO as displayed. New password is displayed for approximately 10 seconds.
S/N: 1234567 New PW: 12345
DHCP: Enabled
<-- Return
tp6804

Figure 2-2 Network Configuration Submenu, RDC2 and VSC Controllers

2.3.3 RDC/DC Controller Password

The generator set controller password is required to make the initial Internet connection with OnCue software. The password may have been recorded during the installation of the Ethernet option board on the generator set controller. See TT-1566 or the procedure below.

Use the following procedure to find the controller password. The password will be shown as a four-digit number on the RDC/DC controller display on the generator set.

1. Press the OFF button to place the controller into OFF mode.
2. Press the down arrow button (RDC) or exercise button (DC) 5 times. See Figure 2-25. Note the four-digit code displayed on the controller. This is the controller password.
3. Write down the password to enter into OnCue®.
4. Press OFF to clear the display.

Note: Do not repeat this procedure after the password has been entered into OnCue.

The controller password changes each time this procedure is performed. If the controller is connected to OnCue and this procedure is performed again, the connection will be lost.

2.4 Add Device

Connect the generator set controller to OnCue®.

2.4.1 RDC2/DC2 and VSC Controller

1. To connect to the generator set for the first time, click on Add Device in the OnCue Toolbar at the top of the screen. See Figure 2-1. The Add Device window opens.
2. Enter the generator set serial number and controller password (see Section 2.3.1 or Section 2.3.2) and click Connect. The generator set serial number is shown on the generator set nameplate.

   Note: If the password is typed incorrectly during Add Device, see Section 2.4.3.
3. The Device Activation window opens. See Figure 2-3. Enter the 12-digit activation code provided with the OnCue kit, and click OK.

   You will not be prompted for an activation code if another computer running OnCue software added the device previously. The activation code is only required the first time.

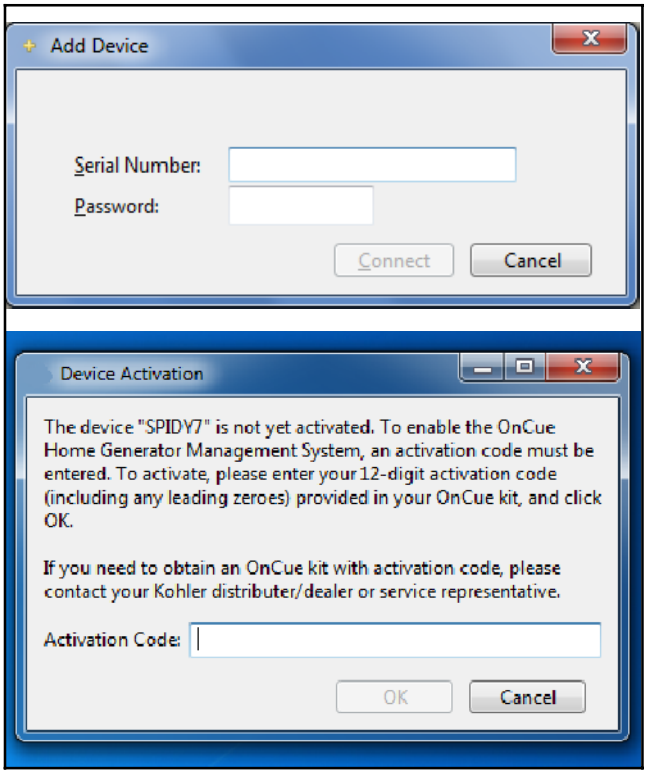

Add Device
Serial Number:
Password:
Connect
Cancel
Device Activation
The device "SPIDY7" is not yet activated. To enable the OnCue Home Generator Management System, an activation code must be entered. To activate, please enter your 12-digit activation code (including any leading zeroes) provided in your OnCue kit, and click OK.
If you need to obtain an OnCue kit with activation code, please contact your Kohler distributer/dealer or service representative.
Activation Code:
OK
Cancel

Figure 2-3 Add Device and Device Activation Window (RDC2/DC2)

2.4.2 RDC/DC Controller

1. To connect to the generator set for the first time, click on Add Device in the OnCue Toolbar at the top of the screen. See Figure 2-1. The Add Device window opens. See Figure 2-4.
2. Enter the controller password (see Section 2.3.3) and the generator set serial number. The generator set serial number is shown on the generator set nameplate, and may have been recorded during the installation of the Ethernet option board on the generator set controller.

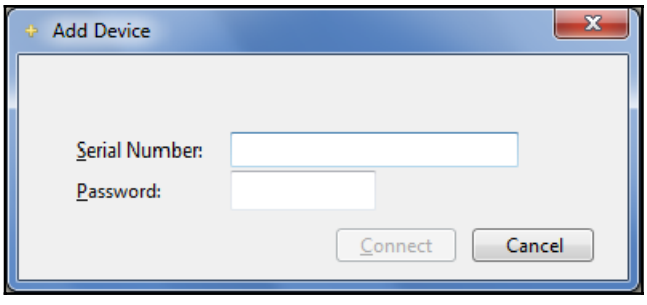


Figure 2-4 Add Device Window (RDC/DC)

2.4.3 Incorrect Password

If the password is typed incorrectly during Add Device, select the device in the navigation panel on the left and then click on Connect Device in the OnCue Toolbar to try again.

Note: Passwords are case-sensitive. If your password includes letters as well as numbers, check the Caps Lock key on your PC.

2.4.4 Changing the Password

After OnCue® has connected to the controller, the software allows you to change the password to any alphanumeric code of your choice. Passwords are case-sensitive; check the Caps Lock key on your PC.

Note: Changing the password is strongly recommended.

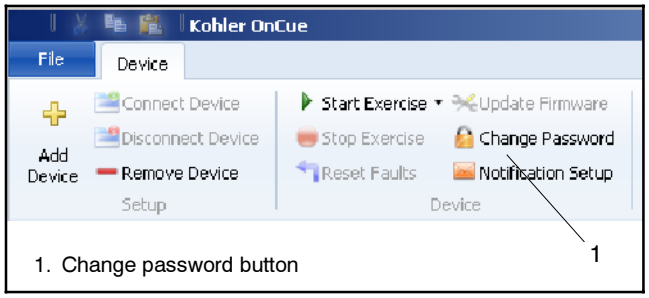


Figure 2-5 Change Password Button

1. With the device connected, click on the Change Password command in the ribbon at the top of the screen. See Figure 2-5.
2. The change password window opens. Type in the password of your choice, then type it again in the second box to confirm.
3. Click OK to change the password.

2.5 Connect and Monitor Multiple Generator Sets

Kohler OnCue can monitor more than one generator set. To connect to another generator set, click on the Add Device command again and enter the serial number and password for the new generator set, and activation code (if required). See Section 2.4.

2.6 Connect/Disconnect Device

The Connect Device and Disconnect Device commands will connect or disconnect the selected device from the OnCue server. Be sure to click on the device in the navigation panel to select it if more than one device is connected.

If the password is typed incorrectly during Add Device, select the device in the navigation panel on the left and then click on Connect Device to try again.

2.7 User Interface (UI)

The OnCue® User Interface (UI) has three views accessible from the tool bar near the top of the screen. See Figure 2-1 or Figure 2-10.

Power Chain View. Displays an overview of how power is flowing through the power system, including the generator set and modules.

Gauges View. Displays gauges for key parameters of the selected generator set.

Parameters View. Displays a list of parameters for all connected generator sets and modules.

The OnCue Toolbar, Navigation Panel, and Event History panel are visible in all three views.

The following sections describe the details and features of the three different views, the tool bar, the navigation panel, and the event history panel.

2.7.1 OnCue Toolbar

In addition to the operation data display and remote control buttons on the user interface screen, the Toolbar near the top of the screen provides additional functions, which are described in later sections of this manual.

Small icons for frequently used commands can be added to the Quick Access Toolbar at the top of the screen. Right-click on the desired command in the toolbar and select Add to Quick Access Toolbar. To hide the toolbar, right click anywhere on the toolbar and select Minimize the Ribbon.

2.7.2 Navigation Panel

All connected devices appear in the navigation panel on the left side of the screen. See Figure 2-10. Click on the device in the navigation panel to select and view the status of that device. The selected device is highlighted in the navigation panel.

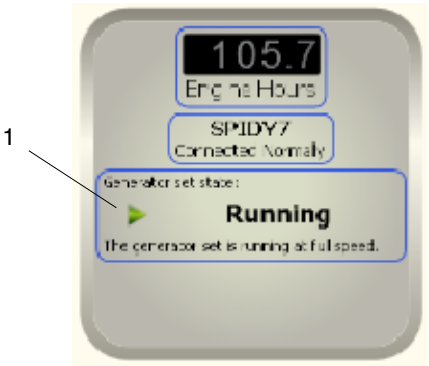
2.7.3 Status Indicators

The status indicator shows the generator set status as described in Figure 2-6. The status indicator appears in the navigation panel and the gauges view. See Figure 2-7 and Section 2.7.7 for illustrations.

If a fault condition is indicated, check the event history or the controller display to identify the fault.

Indicator		Status	Description
	Open blue square	Standby	Generator set is ready to start.
	Green triangle	Cranking or running	Engine is starting or running.
	Red X	Fault shutdown	The controller has detected a fault condition and the generator set has shut down.
	Red circle	Off	Controller is OFF.
	Solid orange square	Disconnected	No network connection.

Figure 2-6 Status Indicator Symbols



1. Status indicator symbol

Figure 2-7 Status Indicator (Gauges View)

2.7.4 Event History

The Event History is displayed at the bottom of the screen. To resize the Event History pane, position the cursor at the top of the Event History pane so that it changes to a double arrow. Click and drag to move the top of the pane up or down.

Use the event history to view current device status and event history. The event history lists date- and time-stamped events including engine start and stop, generator set faults (warnings and shutdowns), and engine faults. Active faults are shown in red, and shutdowns are shown in boldface text. See Figure 2-10 for a typical event history window.

Engine Hrs and Controller Hrs display the hours of operation on the generator set engine and controller at the time of the fault. The controller hours may be different than the engine hours.

Click on a column heading to sort events by the criteria in that column.

Events can be stored and exported to a file. See Section 2.13.2 for instructions.

Hide or show the Event History panel using the OnCue® Toolbar and *File* tab. See Section 2.13.3 for instructions.

2.7.5 Power Chain View

The Power Chain View is available when one generator set is connected. The view visualizes flow of power through the power system.

Power Chain View, RDC2/DC2. See Figure 2-10. In the View Mode, view the status of the generator set, RXT ATS, LCM, and PIM (if modules are connected to the generator set controller). In Edit Mode, label the PIM and LCM inputs and outputs. In Control Mode, control the PIM outputs. See Section 2.10 for more information.

Power Chain View, VSC. See Figure 2-11. In the View Mode, view the status of the generator set and PIM (if connected to the generator set controller). In Edit Mode, label the PIM inputs and outputs. In Control Mode, control the PIM outputs. See Section 2.10 for more information.

Click on the desired device in the navigation panel to view information for that device.

The Power Chain View has three modes to view, edit, and remotely control how power is flowing through the power system modules. Each module of the system is explained below. See also Figure 2-10.

Module	Power Chain Options
Generator Set	View and control
ATS*	View only
PIM	Edit labels and remote control outputs 3–6
LCM*	Edit labels
Battery bank †	View only
* Not shown for Model VSG generator sets † Model VSG generator sets only	

Green lines will appear in the Power Chain View if a module is receiving power or communication. If no power or communication is received, the line is gray.

Note: Modules will not appear on Power Chain View if power or RBUS is not connected to the modules.

Generator Set. The view shows the generator set status indicated below.

- Running
- Standby
- Off
- Disconnected
- Operation Data: Generator Voltage, Battery Voltage, Frequency, Engine Oil Temp., Run Time data

Automatic Transfer Switch (ATS). If a Model RXT ATS is connected, the view shows the ATS status indicated below.

- Utility Supplying Power to the System
- Generator Set Supplying Power to the System
- ATS Not Connected

If a Model RXT ATS is connected, the Power Chain View displays an image of an RXT ATS with an enlarged version of the status indicator. Source available LEDs light to indicate that the utility and/or generator sources are available. The utility or generator source supplying load LED lights to show which source is connected to the building load (i.e. contactor position, normal or emergency).

Note: If a Model RXT loses communication, the ATS image changes to a plain picture of an ATS until communication is restored. See Figure 2-8.

If the ATS is a Model RRT, RDT, or RSB, the Power Chain View displays a plain picture of an ATS without an indicator panel. See Figure 2-8.

Figure 2-8 Plain ATS without Indicator Panel

Programmable Interface Module (PIM) In View Mode, monitor the PIM input and output status and view labels of items connected to the system. An LED for each input/output indicates status. A green LED indicates the item is on. A red LED indicates the item is off.

OnCue® can also be used to remotely control PIM outputs 3 through 6. See Section 2.10 for information.

The PIM does not appear in the Power Chain View if it is not receiving power and communication.

Load Control Module (LCM). In View Mode, monitor the status and view labels of loads connected to the system. An LED for each load indicates load status. A green LED indicates a load is powered (on). A red LED indicates the load is shed (off).

Control Mode has no effect on the LCM.

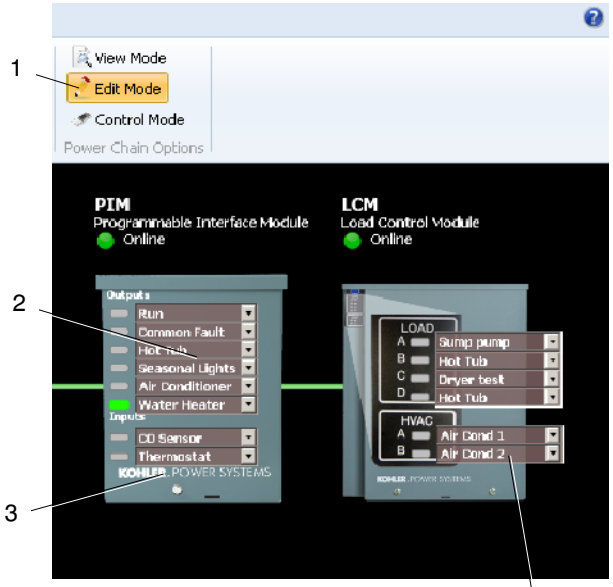
The LCM does not appear in the Power Chain View if it is not receiving power and communication.

2.7.6 Change Label Descriptions

Use OnCue® in Power Chain View to change the PIM and LCM label descriptions to easy-to-understand text. See Figure 2-9.

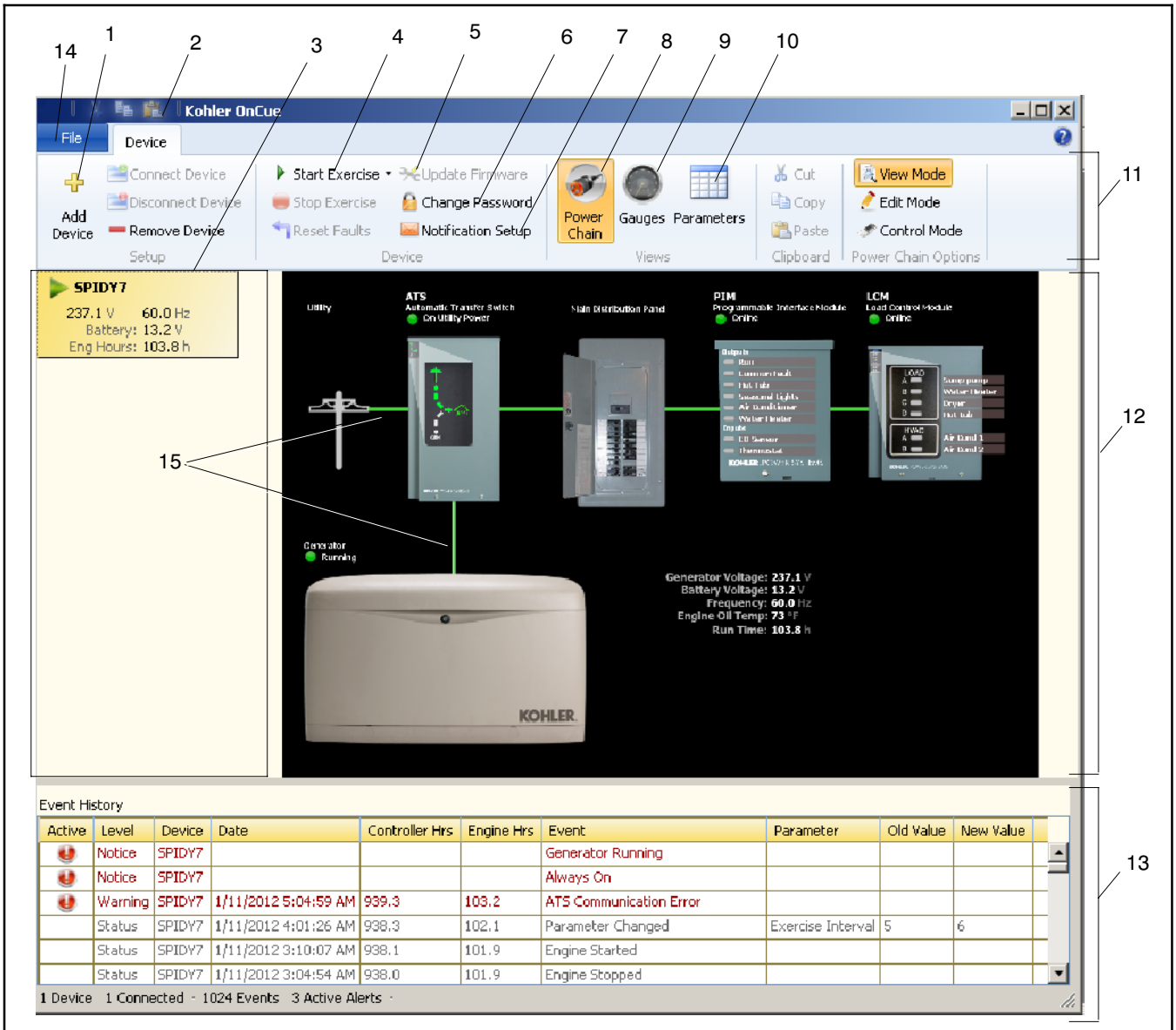
Change the label descriptions to show what is being controlled. For example, connect output 3 to the storm shutters on your vacation home and label it “Storm Shutters”. When bad weather is forecast, you can use your computer to close the storm shutters from a remote location.

1. Select Edit Mode in the OnCue Toolbar.
2. Click the label you want to fill in and enter text or click the down arrow to view and select previously-used labels.
3. Select View Mode in the OnCue Toolbar to return to the normal Power Chain View display.



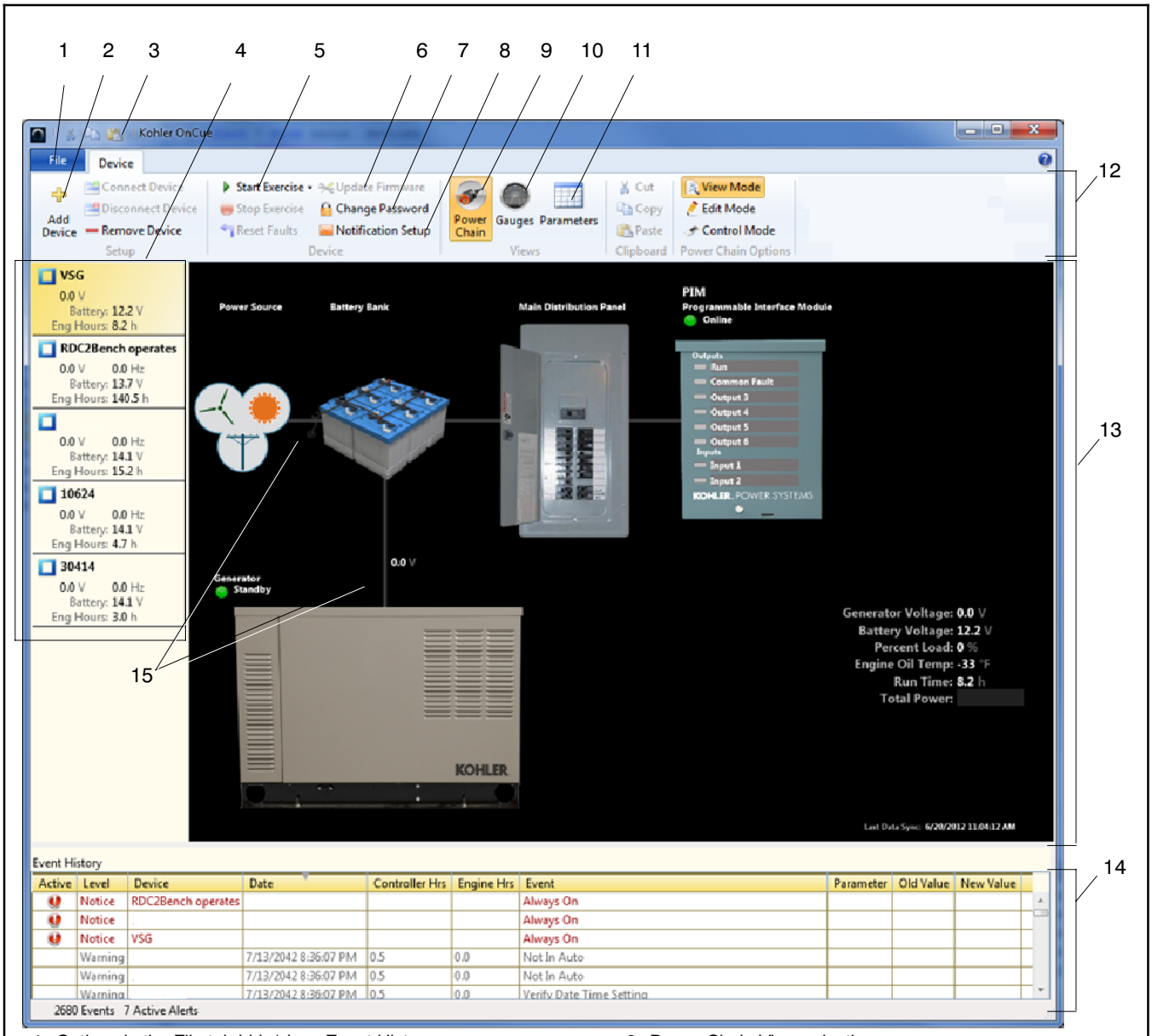
1. Click Edit Mode.
2. Click and enter text here.
3. Click on LED or label on PIM to remote control. See Section 2.10.

Figure 2-9 LCM and PIM Label Descriptions



1. Add Device Command (Section 2.4)
2. Quick Access toolbar
3. Navigation panel with generator set status information
4. Remote control commands (see Section 2.9)
5. Update Firmware command (see Section 2.12)
6. Change Password command
7. Notification Setup command
8. Power Chain View selection
9. Gauges View selection
10. Parameters View selection
11. OnCue Toolbar
12. Power Chain View
13. Event History
14. Options in the File tab hide/show Event History
15. Green line showing utility power and generator set power is available

Figure 2-10 OnCue® User Interface Screen (Power Chain View with one generator set and 3 modules connected–ATS, PIM, and LCM)



1. Options in the File tab hide/show Event History
2. Add Device Command (Section 2.4)
3. Quick Access toolbar
4. Navigation panel with generator set status information
5. Remote control commands (see Section 2.9)
6. Update Firmware command (see Section 2.12)
7. Change Password command
8. Notification Setup command
9. Power Chain View selection
10. Gauges View selection
11. Parameters View selection
12. OnCue Toolbar
13. Power Chain View
14. Event History
15. Green lines show primary power source and generator set power are available

Figure 2-11 OnCue® User Interface Screen with 6VSG Generator Set (Power Chain View with one 6VSG generator set, battery bank, and one PIM)

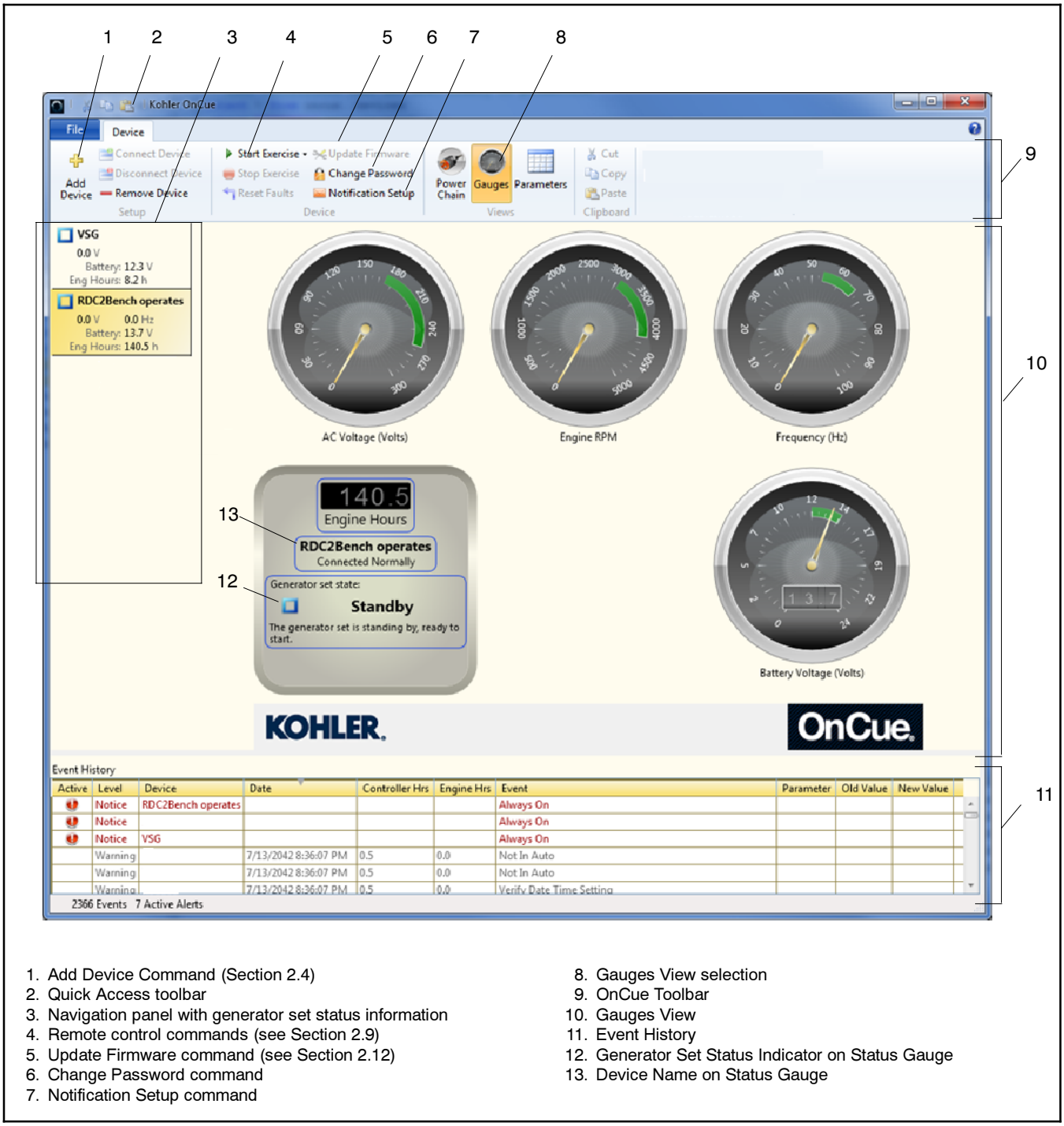
2.7.7 Gauges View

The Gauges view displays generator set status and operation information on simulated gauges. See Figure 2-12 for the gauges view for RDC/DC and RDC2/DC2 controllers. See Figure 2-13 for the gauges view for the VSC controller.

Click on the desired generator set in the navigation panel to view information for that generator set.

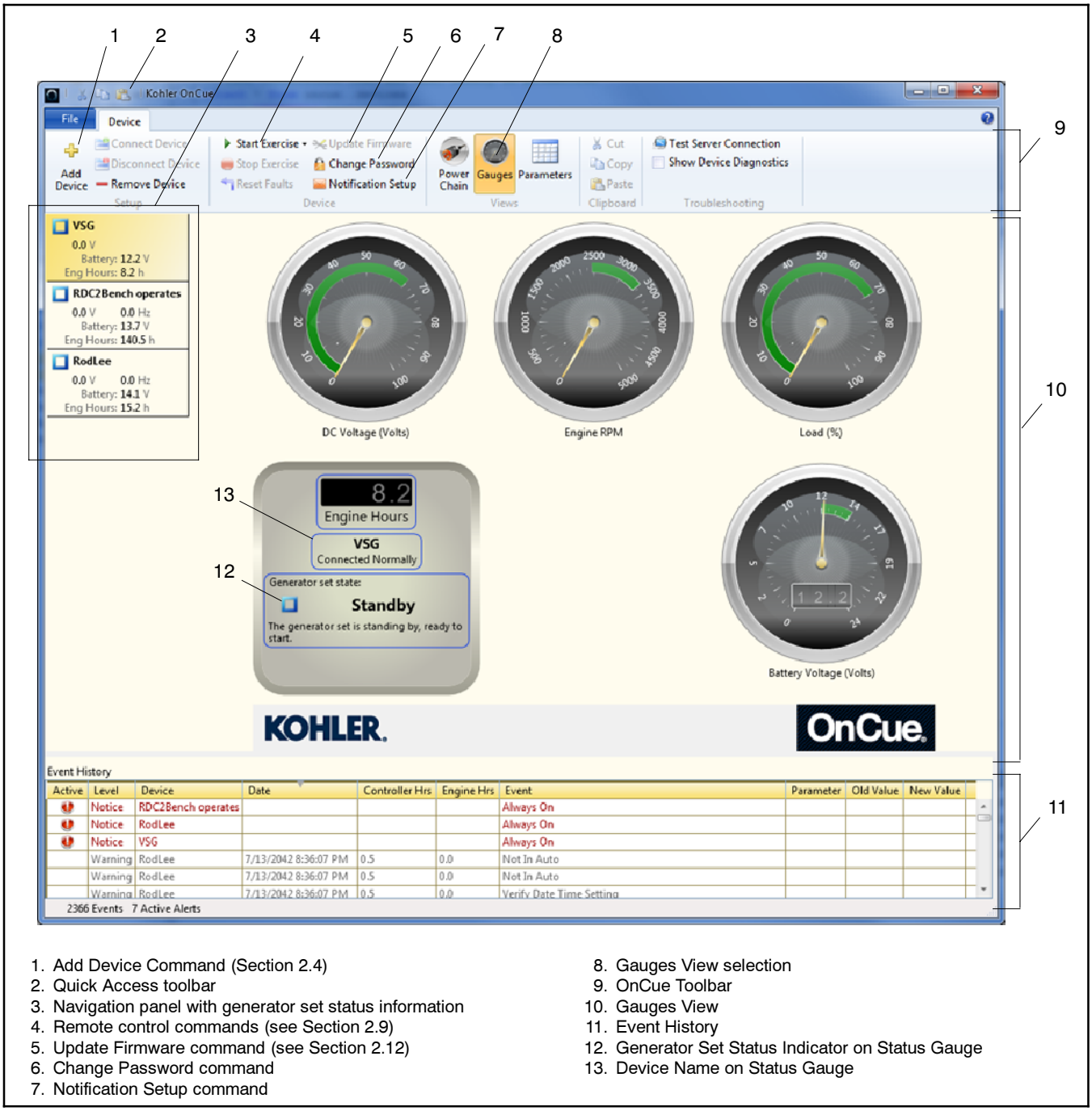
The Gauges view displays the generator set operation data on easy-to-read simulated gauges. See Figure 2-12. On all gauge displays, the green area marks the acceptable range of values when the generator set is running. The needles on the gauge display move as readings change, providing a graphic representation of the generator set operation. The data is also displayed numerically on each gauge. The following data is displayed.

- Voltage:
  - AC Voltage is displayed for the output voltage of the generator set. (RDC2/DC2 and RDC/DC controllers)
  - DC Voltage is displayed for the output voltage of the VSG generator set.
- Engine speed, in RPM, is indicated on the tachometer-style gauge.
- Engine hours, which is the total generator set run time, is displayed in the status window in the lower left corner of the Gauges View screen.
- Frequency, in Hz, is the frequency of the generator set output. The frequency will be 50 or 60 Hz when the generator set is running. (RDC2/DC2 and RDC/DC controllers)
- % Load is displayed instead of frequency for the model VSG generator set with the VSC controller.
- Battery voltage, in volts DC, is the voltage of the engine starting battery.
- The generator set status is shown in the lower left corner of the Gauges View screen. See Figure 2-6 for definitions of status indicator symbols.



1. Add Device Command (Section 2.4)
2. Quick Access toolbar
3. Navigation panel with generator set status information
4. Remote control commands (see Section 2.9)
5. Update Firmware command (see Section 2.12)
6. Change Password command
7. Notification Setup command
8. Gauges View selection
9. OnCue Toolbar
10. Gauges View
11. Event History
12. Generator Set Status Indicator on Status Gauge
13. Device Name on Status Gauge

Figure 2-12 OnCue® User Interface Screen Gauges View (shows generator set information only)



1. Add Device Command (Section 2.4)
2. Quick Access toolbar
3. Navigation panel with generator set status information
4. Remote control commands (see Section 2.9)
5. Update Firmware command (see Section 2.12)
6. Change Password command
7. Notification Setup command
8. Gauges View selection
9. OnCue Toolbar
10. Gauges View
11. Event History
12. Generator Set Status Indicator on Status Gauge
13. Device Name on Status Gauge

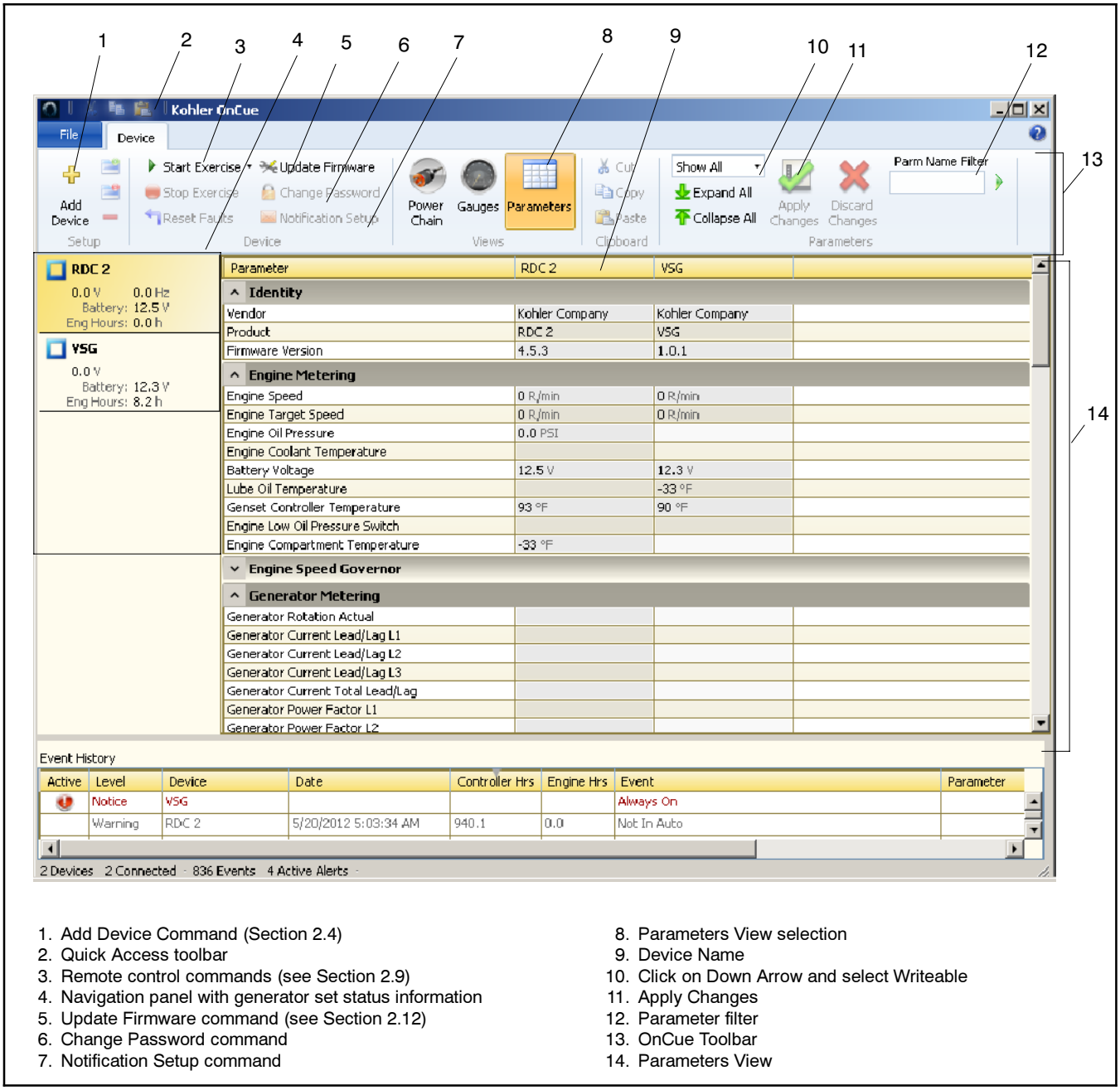
Figure 2-13 OnCue® User Interface Screen Gauges View for VSC Controller

2.7.8 Parameters View

Click on the Parameters command shown in Figure 2-14 to see individual parameters and detailed metering information. If multiple generator sets are connected, data for each connected generator set is shown in a separate column. The generator set name or serial number is shown at the top of each column.

Selected parameters can be changed using the Parameters View screen, including:

- Measurement system, English or metric units
- Exercise interval, duration, and mode (see Section 2.9.1)
- Network configuration parameters (settings are read from the controller and should not require changes; see Section 3.4)



1. Add Device Command (Section 2.4)
2. Quick Access toolbar
3. Remote control commands (see Section 2.9)
4. Navigation panel with generator set status information
5. Update Firmware command (see Section 2.12)
6. Change Password command
7. Notification Setup command
8. Parameters View selection
9. Device Name
10. Click on Down Arrow and select Writeable
11. Apply Changes
12. Parameter filter
13. OnCue Toolbar
14. Parameters View

Figure 2-14 OnCue® User Interface Screen (Parameters View)

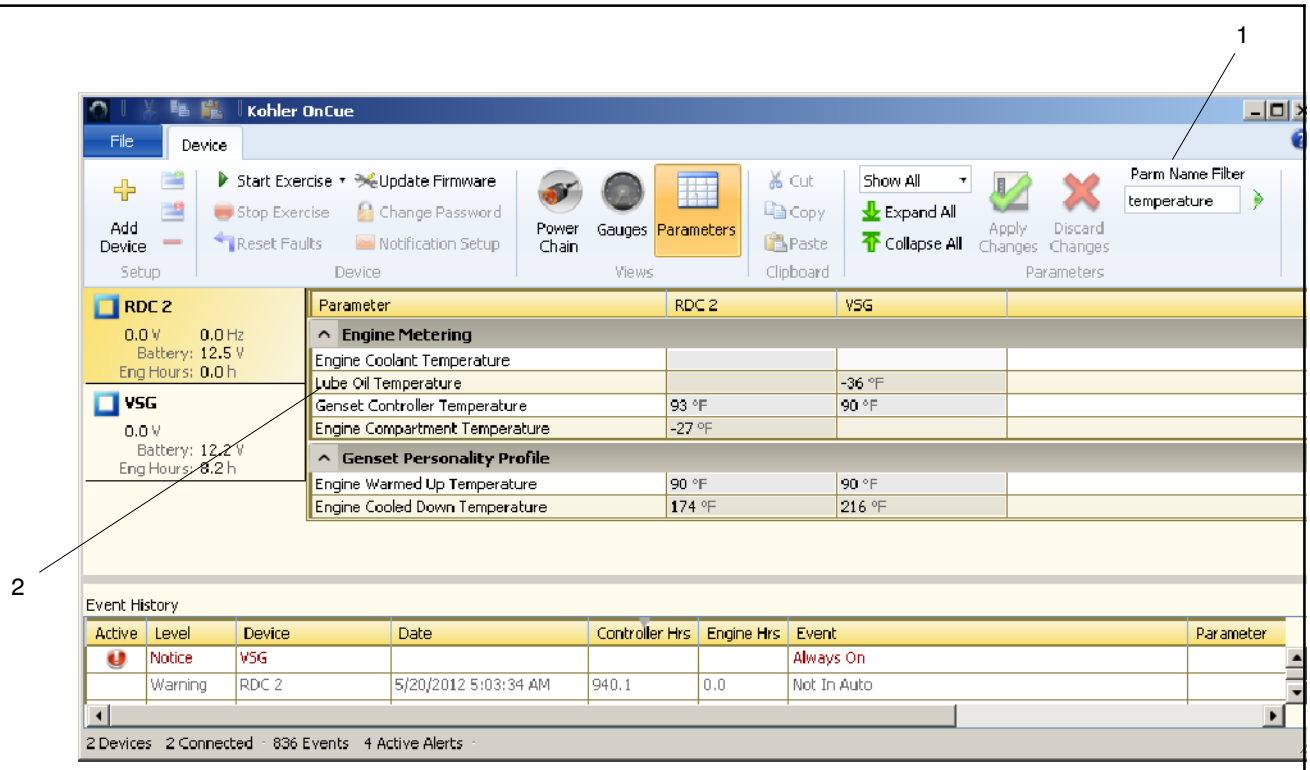
Cells with a gray background indicate parameters that cannot be changed. To display only parameters that can be changed, select Writeable in the Parameters section in the OnCue® Toolbar at the top of the screen. See Figure 2-14. Other parameters can only be changed by an authorized Kohler distributor or dealer using Kohler® SiteTech™ software.

To change a parameter in the Parameters View screen, click in the desired cell and select the new setting from the drop-down list, or type in the new setting. Click on Apply Changes. The change is not activated until you click on Apply Changes in the OnCue® Toolbar. See Figure 2-14.

Parm (Parameter) Name Filter Command

Use the Parm Name Filter command to display only selected parameters. See Figure 2-15 for the location of the Parm Name Filter Command near the top right corner of the screen. The filter will cause OnCue to display only parameters with a particular word in the name. For example, entering the word Temperature will allow only parameters with Temperature in the name to be displayed. All other parameters and groups will be hidden.

To use the filter, type the desired word into the box and then click the green arrow to the right of the box. To view all parameters, delete the word from the box and click the green arrow again.



1. Parm Name Filter Command
2. Only parameter names that contain the selected word are shown

Figure 2-15 Parm Filter Command (showing filter on the word Temperature)

2.8 Fault Notification

Warnings and shutdowns are shown in the event history displayed at the bottom of the screen. Active warnings appear in red.

See the generator set Operation Manual for fault descriptions.

2.8.1 Gauges View

The user interface (UI) displays active faults (warnings and shutdowns) in the lower left corner below the gauges. A red X indicates a fault shutdown. See Figure 2-6.

Warnings and shutdowns are shown in the event history displayed at the bottom of the screen. Active warnings appear in red.

See Section 2.8.3 for instructions to use the Reset Faults command.

See the generator set Operation Manual for fault descriptions.

2.8.2 Power Chain View

The Power Chain View does not display fault conditions. Refer to the Navigation Panel on the left side of the screen for status. See Figure 2-6 and Figure 2-12.

2.8.3 Reset Faults

The reset faults command is accessible from the OnCue Toolbar at the top of the screen. See Figure 2-10.

Click on the Reset Faults button to clear controller faults before attempting to restart the engine. The reset faults button is active only when a fault condition is detected.

Note: A locked rotor (code Lr on RDC/DC controller) fault cannot be reset remotely. Contact an authorized distributor or dealer for service in the event of a locked rotor fault.

Always identify and correct the cause of a fault shutdown before resetting the controller. See the generator set Operation Manual for more information about generator set faults and troubleshooting. Contact your local distributor/dealer for service.

2.9 Remote Generator Set Control

The Start Exercise, Stop Exercise, and Reset Faults commands allow generator set control from a local or remote PC. The commands appear in the OnCue® Toolbar near the top of the screen. See Figure 2-10.

The generator set must be in AUTO mode to allow remote control.

2.9.1 Start Exercise

Clicking on Start Exercise reveals two options. See Figure 2-16. Click on the desired option to start the generator set and run for 20 minutes (default setting).

The Start Exercise options are unscheduled. Starting the engine using these commands does not change the exercise schedule on the generator set.

- Start Unloaded Full-Speed Exercise. Runs the generator set at full speed without transferring the load from utility. The model VSG generator set runs at rated no-load speed.

- Start Unloaded Cycle Exercise. Runs the unloaded cycle exercise with complete system diagnostics. See generator set Operation Manual for information about the unloaded cycle exercise and diagnostics.

To start an unloaded cycle exercise, first verify that the exercise mode is set to Unloaded Cycle. Go to the parameters view and see Section 2.9.3.

The exercise runs for 20 minutes (default setting) and then stops. Use the Stop Exercise command to stop the engine earlier, if necessary. The exercise run duration can also be changed using OnCue. See Section 2.9.3.

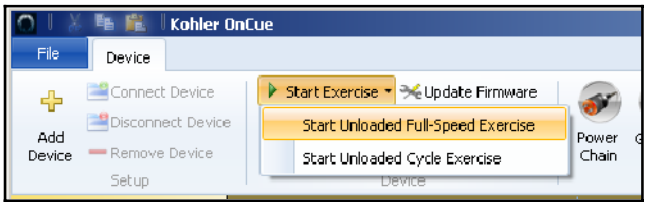


Figure 2-16 Start Exercise Options

2.9.2 Stop Exercise

After starting the engine using one of the unscheduled Start Exercise options listed above, click on Stop Exercise to stop the engine before the programmed stop time, if necessary.

Note: The Stop Exercise command will not stop the generator set if it was started at the controller by pressing RUN, by a remote start command from an ATS, or by a scheduled exercise set at the controller.

2.9.3 Exercise Settings

The exercise settings are located in the ATS Exercise group in the Parameters View.

Exercise Mode. To check the exercise mode and change it, if necessary, click on the Parameters View command in the OnCue Toolbar. See Figure 2-17. Scroll down to the ATS Exercise group and check the Exercise Mode setting in the column for your generator set. If the desired mode is not displayed, click in the cell to bring up the mode options, select the desired mode, and click Apply Changes.

Note: RDC2/DC2/VSC controller. Changing the exercise mode in OnCue also changes the mode of the exercise that was set by using the Genset System menu on the RDC2/DC2 or VSC controller.

Note: RDC/DC controller. Changing the exercise mode in OnCue also changes the mode of the exercise that was set by pressing the down arrow button or exercise button on the RDC/DC controller.

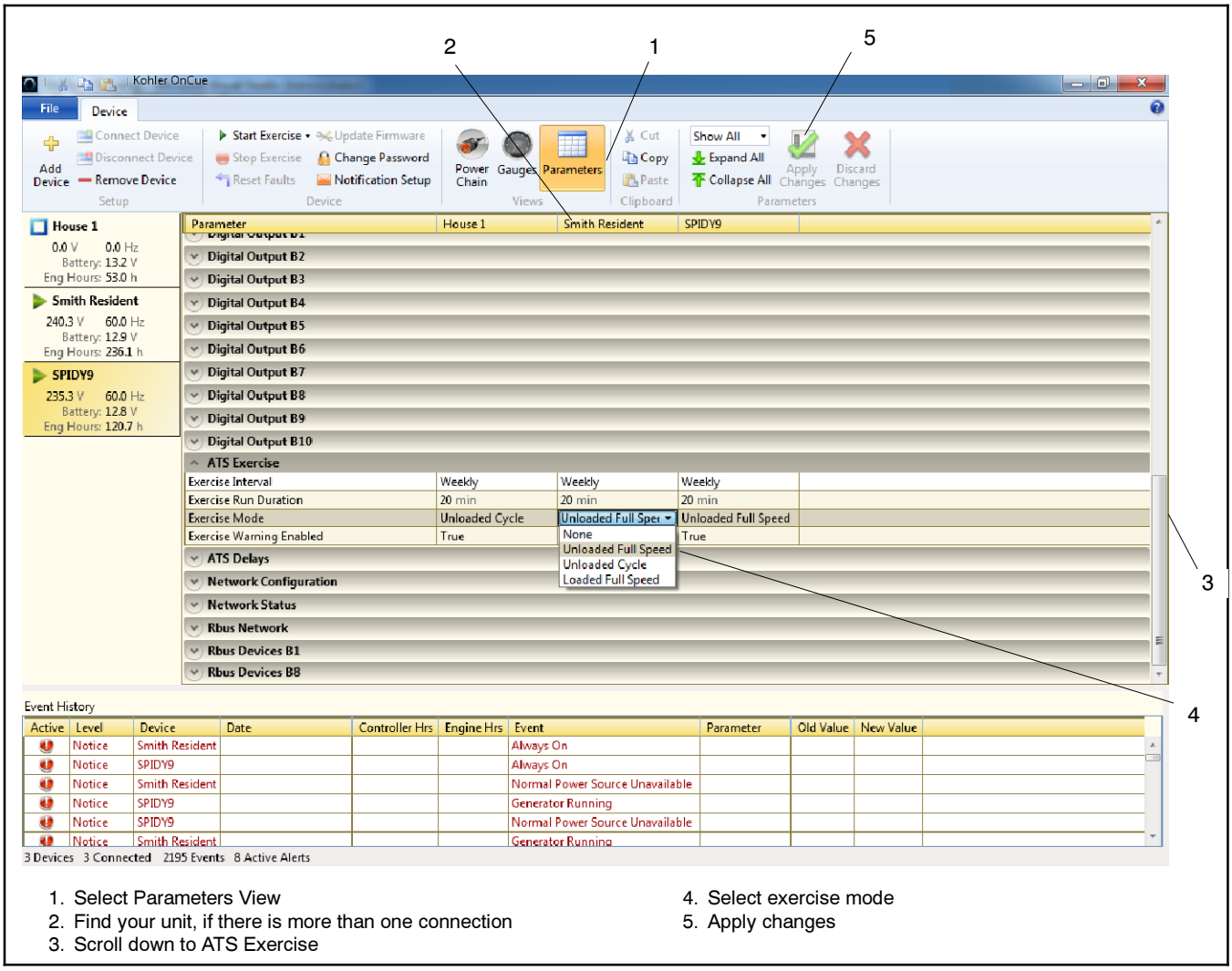
Exercise Run Duration. The default exercise run duration is 20 minutes. The exercise run duration can be changed using OnCue.

Note: RDC2/DC2/VSC controller. Changing the exercise run duration setting changes the duration of all exercise modes.

Note: RDC/DC controller. Changing the exercise run duration setting changes the duration of all timed runs, including exercises set by pressing the Exercise (or down arrow) button on the controller.

Go to the Parameters View screen and scroll down to the ATS Exercise group. See Figure 2-17. Click in the Exercise Run duration cell in the column for the generator set that you want to change. Type in the new duration time, in minutes. Click Apply Changes in the OnCue Toolbar to save the new setting.

Exercise Interval. To check the exercise interval and change it, if necessary, click on the Parameters View command in the OnCue® Toolbar. See Figure 2-17. Scroll down to the ATS Exercise group and check the Exercise Interval setting in the column for your generator set. If the desired interval is not displayed, click in the cell to bring up the options, select the desired option, and click Apply Changes.



1. Select Parameters View
2. Find your unit, if there is more than one connection
3. Scroll down to ATS Exercise
4. Select exercise mode
5. Apply changes

Figure 2-17 Changing the Exercise Mode in Parameter View

2.10 Remote System Control (Power Chain View Only)

Controlling items remotely requires an installed and properly connected Programmable Interface Module (PIM). See TT-1584 for PIM installation and settings.

The PIM provides two programmable inputs and six programmable outputs for connection to customer-supplied equipment. The PIM operates only with generator sets equipped with the Kohler RDC2, DC2, or VSC controller.

Inputs and outputs are factory-set. The inputs and outputs can be changed using a laptop computer connected to the controller and Kohler® SiteTech™ software. SiteTech is available to Kohler-authorized distributors.

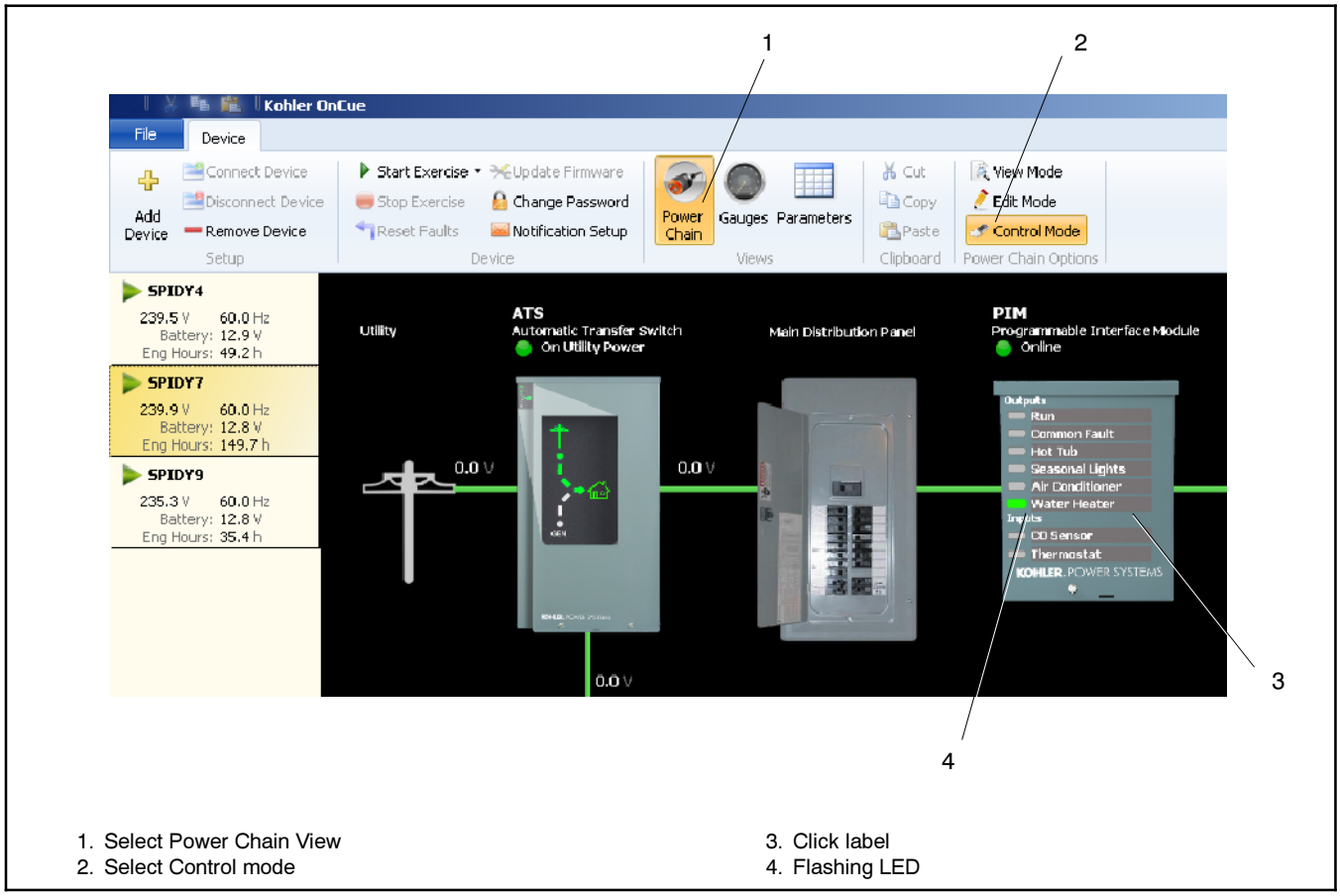
Note: Outputs 1 and 2 are factory-set to Generator Running and Common Fault. Outputs 1 and 2 cannot be controlled remotely through OnCue®.

Use the Power Chain View to remotely control items in your home connected to Outputs 3 through 6.

1. Select Control Mode in the OnCue Toolbar.
2. Move the mouse cursor over the output label. The label will be highlighted.
3. Click the label to turn the output on or off. A green LED indicates the item is on. A red LED indicates the item is off.

   When clicked, the status LED flashes for approximately 5 seconds before changing to the new status.
4. Select View Mode in the OnCue Toolbar to return to the normal display.

See Section 2.7.6 for label renaming instructions.



1. Select Power Chain View
2. Select Control mode
3. Click label
4. Flashing LED

Figure 2-18 Remote System Control, Power Chain View

2.11 Notification Setup

The OnCue® server can be configured to send email or SMS text messages alerting the recipient of generator set events.

Email and text messages include:

- Device description (user-defined)
- Serial number
- Description of the event (see below)

The following events will generate a message to all addresses in the recipients list:

- Generator running
- Generator off
- Generator supplying power
- Generator not supplying power
- Any fault (warning or shutdown). See the generator set Operation Manual for a list of faults.
- Fault cleared

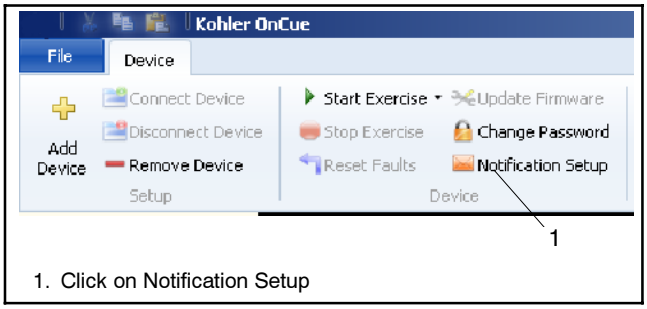
2.11.1 Email Configuration

1. Configure notification options by opening the Notification Setup window. Click on Notification Setup in the OnCue Toolbar. See Figure 2-19.
2. A new window will open. See Figure 2-20.
3. Click on the Enable Notification check-box to allow notification setup and to enable OnCue to send notifications to the addresses on the recipient list. A check mark appears in the box when enabled. If the box is not checked, notifications will not be sent.
4. In the Device Location, type in a description that identifies the generator set. This description will appear in the email subject line.
5. Type the email addresses for new recipients in the Notification list. Place each address on a separate line, or separate email addresses with commas or semicolons.
6. Click OK.

Note: Device name will also change in the Navigation Panel, on the status gauge in the Gauges View, and the column labels in Parameter View.

7. To prevent notification emails from being put into a junk folder by your email system, add the following email address to your email address book: OnCueNotifications@oncue.kohler.com

Figure 2-21 summarizes the notification setup.



1. Click on Notification Setup

Figure 2-19 Notification Setup Command

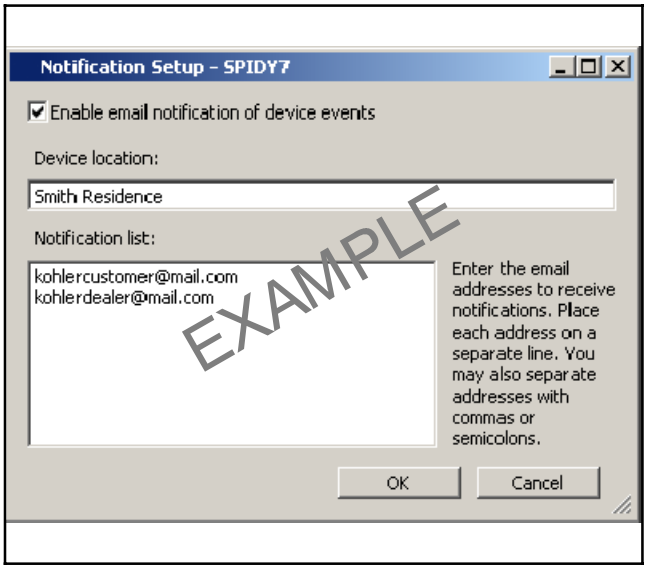

Notification Setup - SPIDY7
Enable email notification of device events
Device location:
Smith Residence
Notification list:
kohlercustomer@mail.com
kohlerdealer@mail.com
EXAMPLE
Enter the email addresses to receive notifications. Place each address on a separate line. You may also separate addresses with commas or semicolons.
OK
Cancel

Figure 2-20 Notification Setup Window

Notification Setup Item	Description
Enable notification	Check this box. Notification cannot be set up and notifications will not be sent if this box is not checked.
Device location	Enter a name or address to identify the generator set location. This description appears in the email subject line and changes the device name in the Navigation Panel Gauges View, and Parameter View. Examples: Smith Residence or 123 Main Street.
Notification list	Enter recipient email addresses into the Notification list box and click the OK button. Separate multiple addresses with a comma, semicolon (;), or space. (This also applies for cell phone SMS text messaging. See Section 2.11.3 for additional information about SMS text messaging.) All recipients' addresses will appear here after they have been added.
OK button	Click OK after typing the recipient's addresses into the Notification list.

Figure 2-21 Notification Setup Information Summary

2.11.2 Email Throttling

Email throttling prevents the receipt of multiple emails about the same condition. If the same fault condition occurs more than twice within 24 hours, further emails about that condition will not be sent until the fault has cleared and not occurred again for at least 24 hours.

For example, if the battery is going bad, the voltage may fluctuate, causing frequent low battery warnings. You will receive two emails about the warnings. Additional emails about this condition will not be sent unless 24 hours pass before the next low battery warning.

2.11.3 Cellular Telephone SMS Text Message Configuration

SMS text messaging to a cellular telephone or other device is accomplished by sending an email to the cellular provider's email-to-SMS system. For example, if the customer is a subscriber of Verizon Wireless with the cellular telephone number 920-555-1212, a text message can be sent to their cell phone by sending an email to 9205551212@vtext.com.

Determine the customer's cellular telephone service provider and verify that their cell phone is equipped to receive SMS messages. Make sure that the customer is aware of any text messaging charges the cellular telephone provider may charge for received text messages.

The email address configurations for text messaging for several cellular telephone providers are shown in Figure 2-22. If the customer's provider is not shown, please consult the provider or the provider's website for additional details.

2.11.4 Disable Notification

To stop sending messages, open the Notification Setup window and click on the Enable notification box so that the check mark disappears.

To delete an Email address in the list, highlight the address to remove and click the Delete key on your computer. Then click OK.

Provider	Email Address Configuration for Text Messaging
Alltel	[10-digit phone number]@message.alltel.com
AT&T Wireless	[10-digit phone number]@txt.att.com
Boost Mobile	[10-digit phone number]@myboostmobile.com
Cingular (now part of AT&T)	[10-digit phone number]@mobile.mycingular.com OR: [10-digit number]@cingularme.com
Nextel (now part of Sprint Nextel)	[10-digit phone number]@messaging.nextel.com
Sprint PCS (now Sprint Nextel)	[10-digit phone number]@messaging.sprintpcs.com
T-Mobile	[10-digit phone number]@tmomail.net
U.S. Cellular (http://www.uscellular.com)	[10-digit phone number]@email.uscc.net
Verizon (http://www.verizonwireless.com)	[10-digit phone number]@vtext.com
Virgin Mobile USA	[10-digit phone number]@vmobl.com

Figure 2-22 Email Address Configurations for Text Messaging

2.12 Update Controller Firmware

Use Kohler® OnCue® software to update the controller firmware. See Figure 2-24 for the required firmware version numbers.

Find the firmware file for your device on Kohler TechTools, the Kohler dealer portal at mykprc.kohlerco.com, or this Kohler website: www.kohlerpower.com/oncue.

After updating the controller firmware, be sure to set the exercise. See the generator set Operation Manual for instructions to set an exercise.

2.12.1 Firmware Version Numbers

Software and firmware version numbers consist of three parts separated by periods (or dots) as follows:

[Major version number].[Minor version number].[Build number]

For example, if the version number is 2.3.17, the major version number is 2, the minor version number is 3 and the build number is 17. The build number is typically not shown in OnCue or on the controller display, but is included in the firmware file name.

Preceding zeros are dropped from version numbers for Kohler PC software applications. For example, OnCue version 2.3 is the same as version 2.03.

2.12.2 Firmware Version Identification

Using OnCue. Use the Parameters View in OnCue to check the type of controller and firmware version number.

1. Click on the Parameters View command in the OnCue Toolbar. See Figure 2-14.
2. Go to the Identity group.
3. Expand the group to see the name and controller firmware version.

RDC2 or VSC Controllers: Use the Select button and the up and down arrow buttons to navigate the menus of the controller.

1. Press the Select button once to bring up the main menu. Overview is displayed.
2. Press the Select button to enter the Overview menu. See Figure 2-23.
3. Use the arrow buttons to navigate to the SW Version display to view the controller's firmware version number.

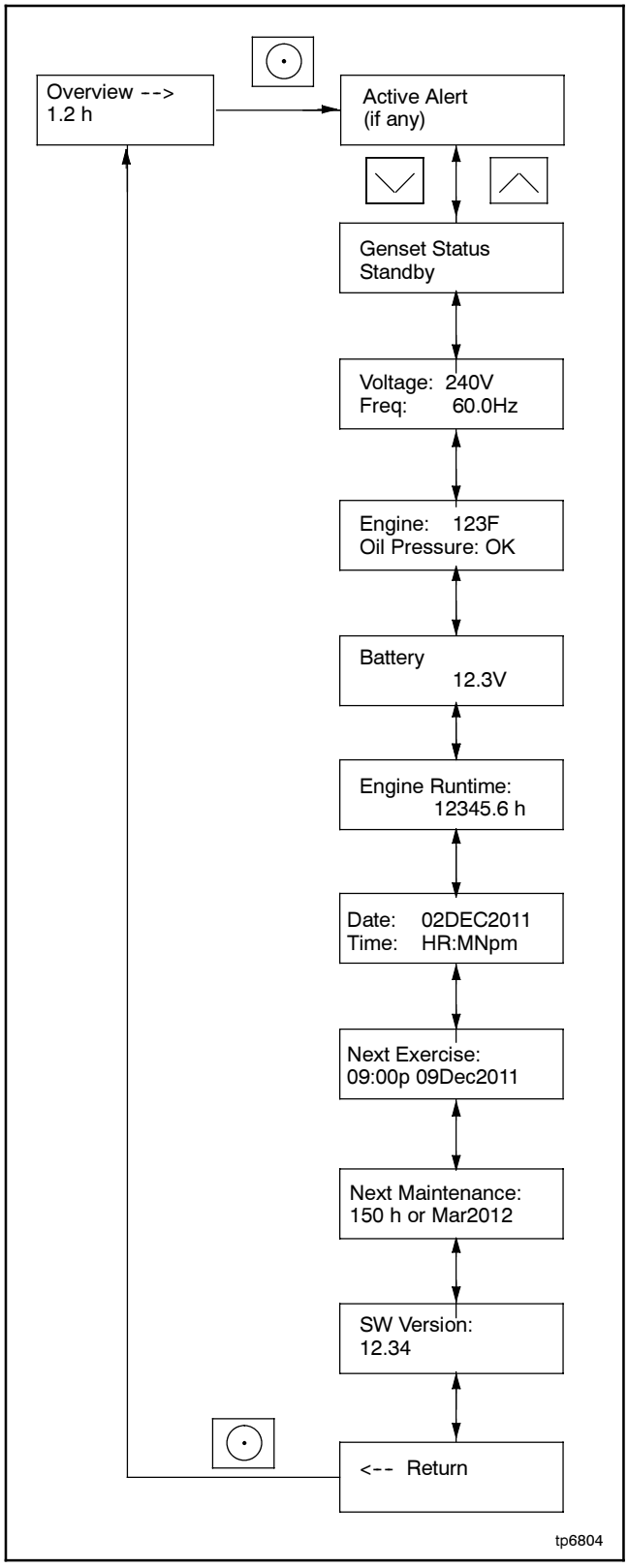


Figure 2-23 SW Version is Displayed in Overview Menu (RDC2 and VSC controllers)

DC2 Controller: The firmware version number is displayed briefly when the RUN button is pressed.

RDC Controller: Press and hold the Select button and the up arrow button simultaneously for about five seconds until the firmware version number appears on the display.

DC Controller: The firmware version number is displayed during the first two seconds of the engine crank cycle.

2.12.3 Controller Connection

Firmware updates cannot be performed over the Internet. The computer must be connected directly to the controller for firmware updates. Connect the controller to the PC or laptop computer using a USB cable connected to the USB port on the controller. See Figure 2-25. See Section 1.11 for USB cable details.

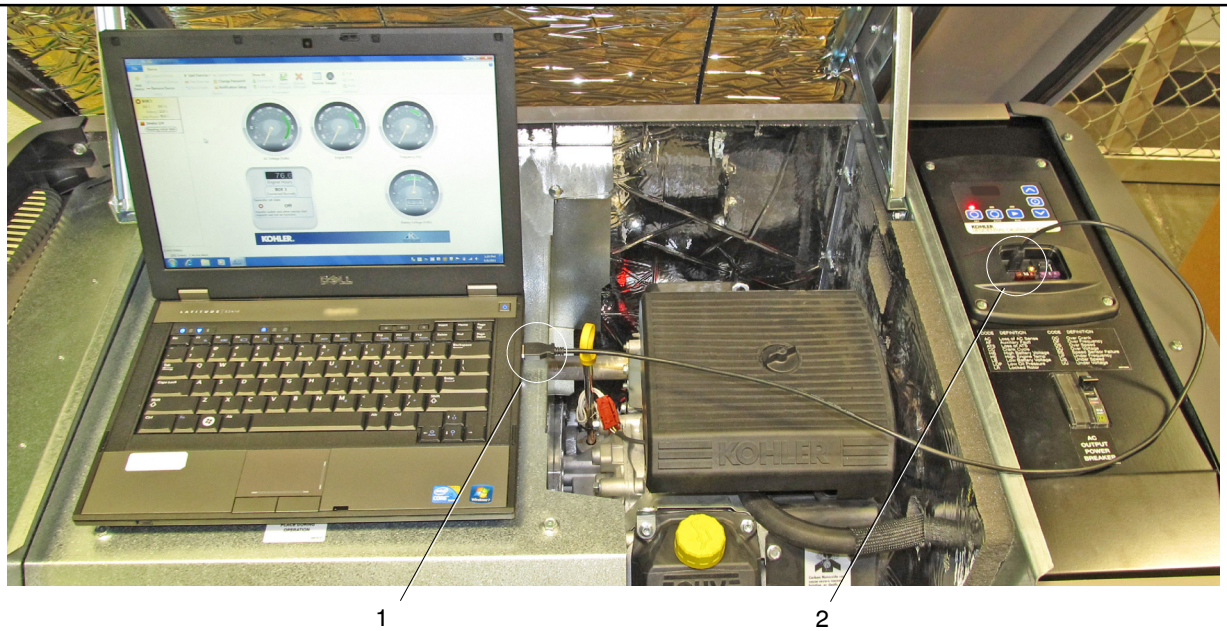
If a device is connected to the PC through the Internet and also connected with a USB cable, the device will appear twice in the navigation panel. Be sure to select the USB connection to update the firmware. The Update Firmware command will be enabled for the USB connection, and disabled (grayed out) for the Internet connection.

2.12.4 Controller Power

Make sure that the generator set's engine starting battery is connected and providing power to the controller during the firmware update. If the controller is not powered by the generator set battery, it will draw power through the USB connection and may drain the battery on the laptop PC.

Model	Controller	Controller Firmware Version Number	Controller Firmware File Name *
6VSG	VSC	1.00	VSC_x_x_x.bin
14/20RES	RDC	3.00	RDC_x_x_x.bin
14/20RESL	DC	3.00	RDC_x_x_x.bin
14/20RESA	RDC2	4.03	RDC2_x_x_x.bin
14/20RESAL	DC2	4.03	RDC2_x_x_x.bin
38RCL	RDC2	4.10	RDC2_x_x_x.bin
48RCL	RDC2	4.03	RDC2_x_x_x.bin
* x_x_x in the filename is the firmware version number.			

Figure 2-24 Controller Firmware Version Numbers and File Names



1. USB cable connection to PC
2. USB cable connection to controller

Figure 2-25 USB Connection for Firmware Update

2.12.5 Firmware Update Procedure

1. Log on to *one* of the following sites to find the firmware file for your device.

   a. Log on to the Kohler Power Resource Center website, navigate to the TechTools page, and navigate to the page for the RDC2/DC2, VSC, or RDC/DC controller.

   b. Use your dealer user ID and password to log on to the dealer portal at www.mykprc.kohler.com.

   c. Log on to www.kohlerpower.com/oncue and follow the instructions on the screen.

2. Find the firmware file for your controller (RDC/DC, RDC2/DC2, or VSC). See Figure 2-24 on page 38 for the firmware file names.

3. Save the new firmware file to your PC. Be sure to note the file location.

4. Press the OFF button on the controller.

5. Use a USB cable to connect the controller to a USB port on your PC. See Figure 2-25. See Section 1.11 for USB cable details.

6. Start OnCue®.

7. The program should recognize the connected device. Wait for OnCue to read the controller data.

8. If the same device is connected through both Ethernet and USB, be sure to select the USB connection in the navigation panel on the left. See Figure 2-26.

9. Click on Update Firmware near the top of the screen. See Figure 2-26.

10. A window will open asking you to browse for the firmware file.

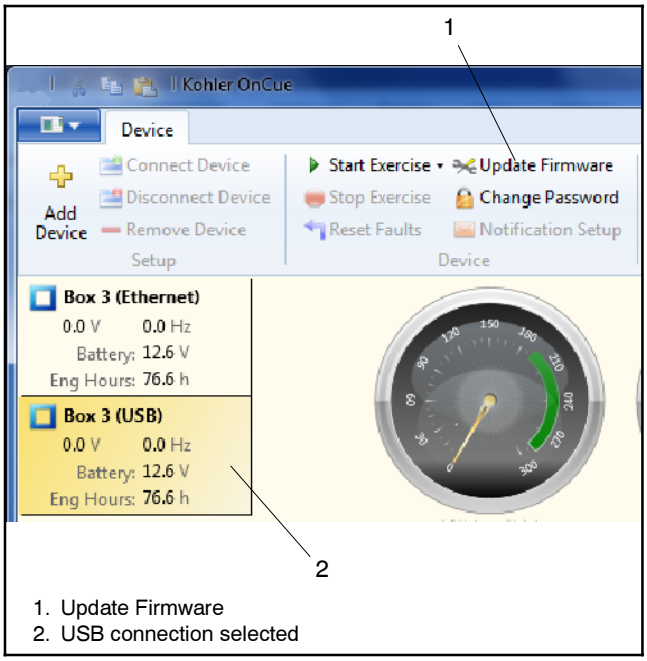
    a. Click the Browse button and navigate to the directory where you stored the firmware file. See Figure 2-24 for the firmware file names, if necessary.

    b. Select the file and click Open.

11. The Update Device Firmware screen displays the current version number, new version number, and file name of the selected firmware file. See Figure 2-27. If all of the information is correct, click Update Firmware.

12. When the update is complete, the screen will display the version numbers and the message Firmware Updated Successfully. Click Close.

13. Use the controller to set a weekly or bi-weekly generator set exercise. See the generator set operation manual for instructions.



1. Update Firmware
2. USB connection selected

Figure 2-26 Update Firmware Command

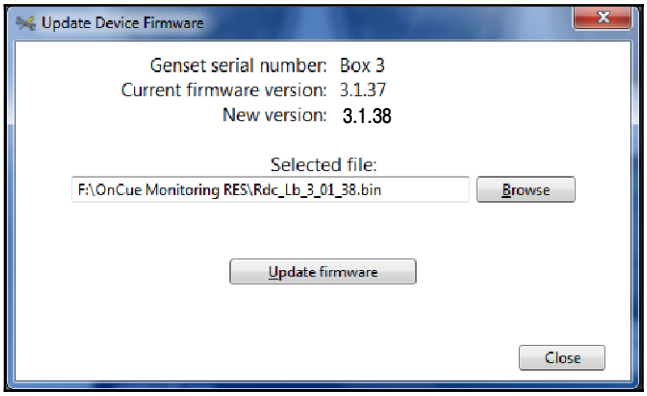
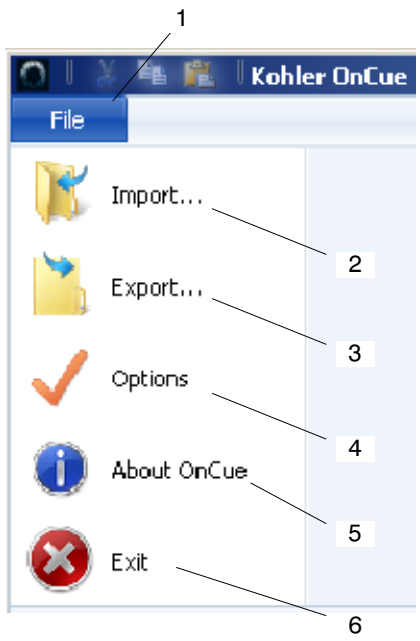


Figure 2-27 Update Device Firmware Screen

2.13 Other Functions

Functions in this section are found under the File tab. See Figure 2-28.



1. File tab
2. Import command. (see Section 2.13.1)
3. Export command (see Section 2.13.2)
4. Options command (see Section 2.13.3)
5. About OnCue® command (see Section 2.13.4)
6. Exit command (see Section 2.13.5)

Figure 2-28 Functions Under the File Tab

2.13.1 Import (Device Connections or Parameters)

Source File. Allows you to import parameter settings from a spreadsheet file that was created using the export command or from a file provided by the factory. See Section 2.13.2 for instructions to export settings to a file. Save the file to your PC and then click the Browse button to find and select the file.

Import Device Connections. Allows you to quickly add devices that were previously saved using the Export Parameters and Events command. This command allows connection of multiple devices without the need to use Add Device for each unit. This command imports the connections but not the parameters. This option does not apply to devices connected via USB.

Import Unlocked Parameters. Allows you to import parameters that were saved to a spreadsheet file using the Export Parameters and Events command. New parameter values are not changed until Apply Changes is clicked.

Import All Parameters. Allows you to import parameters that were saved to a spreadsheet file using the Export Parameters and Events command. New parameter values are not changed until Import is clicked.

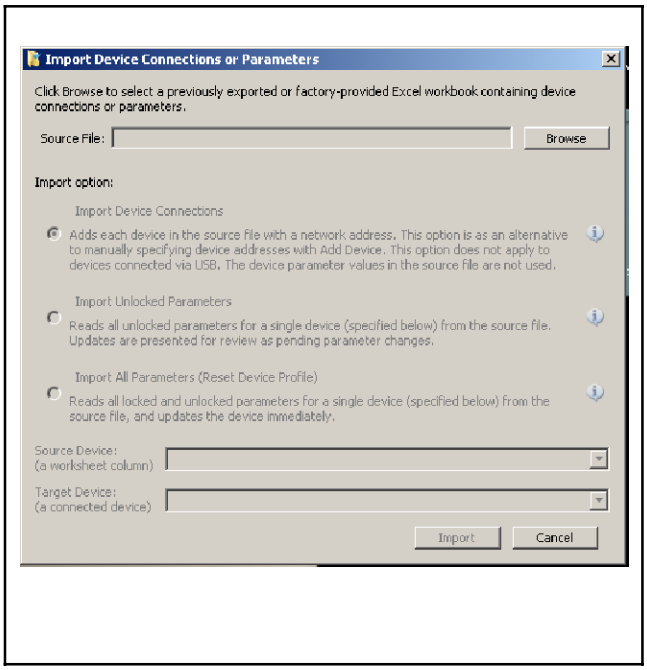

Import Device Connections or Parameters
Click Browse to select a previously exported or factory-provided Excel workbook containing device connections or parameters.
Source File:
Browse
Import option:
Import Device Connections
Adds each device in the source file with a network address. This option is as an alternative to manually specifying device addresses with Add Device. This option does not apply to devices connected via USB. The device parameter values in the source file are not used.
Import Unlocked Parameters
Reads all unlocked parameters for a single device (specified below) from the source file. Updates are presented for review as pending parameter changes.
Import All Parameters (Reset Device Profile)
Reads all locked and unlocked parameters for a single device (specified below) from the source file, and updates the device immediately.
Source Device:
(a worksheet column)
Target Device:
(a connected device)
Import
Cancel

Figure 2-29 Import Device Connections or Parameters Window

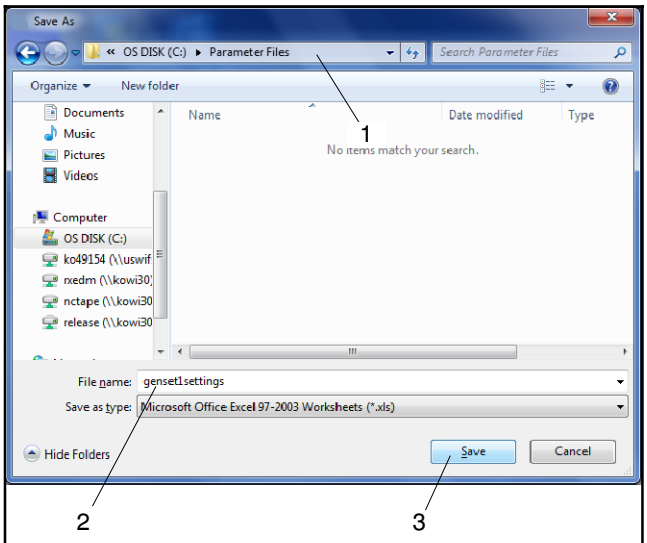
2.13.2 Export (Device Connections, Parameters and Events)

The Export command saves the device connections, parameter settings, and events to a spreadsheet file. This function can save time and help with troubleshooting and service.

File Export Procedure

1. Click on the *File* tab in the upper left corner of the screen. See Figure 2-28.
2. Click on Export. See Figure 2-28.
3. The Export dialog window will open. See Figure 2-30.
4. The default location to save the file is shown at the top of the dialog box. Use the down arrow to select a different file location on the PC, if necessary.
5. In the File Name box, type in a suitable name for the file. Use a name that clearly identifies the device for future reference.
6. Click Save to save the file to the selected directory on the PC. The settings and events will be saved in a spreadsheet file that can be viewed on a PC, edited, and used to import the settings to another device.

Note: When more than one device is connected, the file export command will export all the settings for each device into the spreadsheet.



1. File will be saved to this location on the PC. Use the down arrow to change the location, if necessary.
2. Type in a suitable file name.
3. Click Save.

Figure 2-30 Export Dialog Box for File Export

2.13.3 Options

Three options are available. See Figure 2-31. Some options are selected by default.

OnCue Options
Automatically save device connections and reconnect when OnCue starts
Show device event history
Show menu items for troubleshooting network connections and devices
OK
Cancel

Figure 2-31 Options Window

- **Automatically save device connections and reconnect when OnCue® starts.** This option prevents the need to add devices each time OnCue is stopped and started again.

- **Show device event history.** This option hides or shows the Event History panel.

- **Show menu items for troubleshooting network connections and devices.** Choosing this options adds Troubleshooting to the OnCue Toolbar. See Figure 2-32.

  - Test Server Connection. This test verifies that a device and this application can each connect to the OnCue Server over the current network connection.

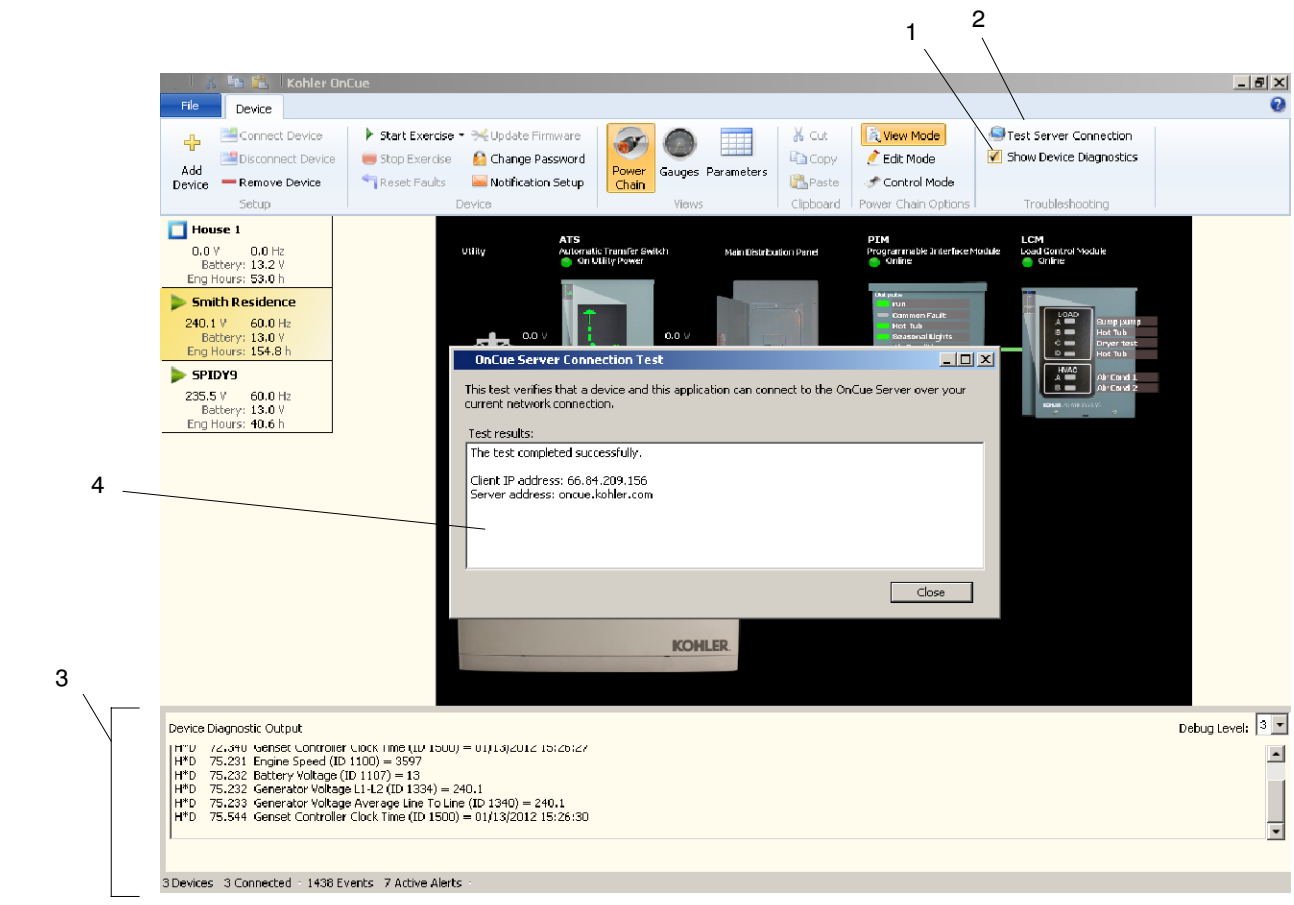
  - Show Device Diagnostics. Check this box to display a window that reports diagnostic information sent by the connected devices.

Option Selection Procedure

1. Click on the box to remove the check mark to turn off the option, if desired.

2. Click on the box to add the check mark to turn on the option, if desired.

3. Click the OK button to close the window.



1. Show Device Diagnostics Option
2. Test Server Connection Option
3. Device Diagnostic Output
4. Test Server Connection Window

Figure 2-32 Troubleshooting Options

2.13.4 About

Click on About to see the OnCue® software version number. See Figure 2-28.

2.13.5 Exit

Click on Exit to close the OnCue program, or click on the X button in the upper right corner of the OnCue screen. See Figure 2-28.

Notes

3.1 Introduction

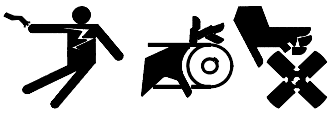
Observe the following safety precautions and the instructions in the generator set service manual when troubleshooting the generator set and connected equipment.

⚠ DANGER

Hazardous voltage.
Will cause severe injury or death.

Disconnect all power sources before opening the enclosure.

⚠ WARNING



Accidental starting.
Can cause severe injury or death.

Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or equipment connected to the set, disable the generator set as follows: (1) Press the generator set off/reset button to shut down the generator set. (2) Disconnect the power to the battery charger, if equipped. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent the starting of the generator set by the remote start/stop switch.

NOTICE

Electrostatic discharge damage. Electrostatic discharge (ESD) damages electronic circuit boards. Prevent electrostatic discharge damage by wearing an approved grounding wrist strap when handling electronic circuit boards or integrated circuits. An approved grounding wrist strap provides a high resistance (about 1 megohm), *not a direct short*, to ground.

3.2 Server Connection Indication

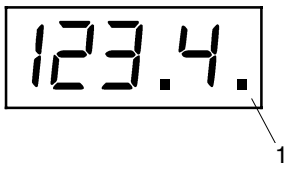
3.2.1 RDC2/DC2 or VSC Controller

Use the OnCue® Toolbar Troubleshooting Option to verify that the controller is connected to the Kohler® OnCue server. See Section 2.13.3 for option selection procedure and instructions to test the server connection.

Refer to Networking Information in the Controller Operation section in the Generator Set Operation Manual for more information.

3.2.2 RDC/DC Controllers

Check for a dot in the lower right corner of the RDC/DC controller display to verify that the controller is connected to the Kohler® OnCue server. See Figure 3-1.



1. Lighted dot indicates server connection

tt1566

Figure 3-1 Controller Display with Server Connection Indicator

3.3 Generator Set Serial Number

Use a USB connection and OnCue or Kohler® SiteTech™ software to check the genset serial number programmed into the controller. Compare this serial number with the serial number on the generator set nameplate. If the S/Ns do not match, use SiteTech software to change the genset serial number programmed in the controller to match the nameplate. SiteTech software is only available to Kohler-authorized distributors and dealers. Contact a Kohler-authorized distributor/dealer for service.

3.4 Network Information

Because of the large number of Internet Service Providers and varying hardware configurations, it may be necessary to work with your Internet Service Provider (ISP) to diagnose and resolve connection issues. Your ISP technician may require information such as the MAC address for the generator set controller. Network information is available from OnCue. If you cannot connect to your controller over the Internet, use a USB cable to connect a PC directly to the controller to find the network information.

1. Open OnCue and select the Parameters View. See Figure 2-10 on page 24.

2. Scroll down to the Network Configuration and Network Status groups. Click on the down arrow to open each group. Network information shown in Figure 3-2 is displayed. If more than one device is shown, check the column headings to find your device.

The IP addresses shown in Figure 3-2 are for illustration only. Do not copy these addresses into your setup.

3.4.1 Network Configuration Group

See Figure 3-2. For most applications, you will not need to change the default settings under Network Configuration. DHCP is enabled (set to True), and the static IP addresses are zero.

If your application requires a static IP address, work with your ISP to configure the settings under Network Configuration. After making the changes, reset the controller.

The server host name cannot be changed using OnCue.

Network Configuration	
DHCP Enabled	True
Static IP Address	0.0.0.0
Static Subnet Mask	0.0.0.0
Static Default Gateway	0.0.0.0
Static DNS Server 1	0.0.0.0
Static DNS Server 2	0.0.0.0
Server Host Name	oncue.kohler.com
Network Status	
IP Address	10.4.124.46
Subnet Mask	255.255.248.0
Default Gateway	10.4.120.1
DNS Server 1	10.4.121.147
DNS Server 2	10.20.36.234
MAC Address	00-14-6F-00-72-69
Connected Server IP Address	209.83.61.10
Network Connection Established	True

Figure 3-2 Network Information in Parameters View (sample data shown)

3.4.2 Network Status Group

The Network Status group contains information that can be useful in troubleshooting connection problems. Three key things can be determined from this information: connection to the local router, hardware Ethernet connection to the generator set controller, and connection to the Kohler OnCue server.

Connection to the Local Router

If DHCP Enabled (under network Configuration) is set to “True,” the first 5 items under Network Status show the success in getting a proper network configuration from the local router. These five items should show numbers other than zero (except that DNS Server 2 may sometimes be zero). If these items are not zero, then the generator set connection to the router is probably ok.

If DHCP Enabled is set to “False” and static addresses are used, the first five items under Network Status should match the information under Network Configuration. The use of static IP addressing is only needed in special cases, and should not be necessary for most home networks.

Ethernet Connection to the Controller

The MAC Address is filled in automatically when the controller power is applied. If this value reads FF-FF-FF-FF-FF-FF or 00-00-00-00-00-00, there may be a problem with the Ethernet connection.

RDC2/DC2 or VSC Controller. Check the Ethernet cable and RJ45 inline connector to the controller.

RDC/DC Controller. Make sure that the Ethernet board is installed correctly with the board-to-board connector in place. See TT-1566, Installation Instructions.

If this condition persists, contact the Generator Service Department.

Connection to the Kohler OnCue® Server

The last two items (Connected Server IP Address and Network Connection Established) verify that the system is connected to the OnCue server.

- If Network Connection Established is False, check the firewall on the local router. Verify that router firewall port 5253 is configured to permit an outbound connection. Refer to the instructions provided with the router.

- Watch the Network Connection Established parameter for at least 30 seconds. If it changes briefly

to False and back to True, the generator controller is not able to maintain the connection to the OnCue server. In this case, contact the Generator Service Department.

3.5 Troubleshooting Connection Problems

Use the following procedure to troubleshoot problems connecting OnCue to your generator set.

1. **Check the controller password and generator set serial number.** See Section 3.3.

2. **Confirm that your PC's Internet connection is working**. Navigate to www.kohlerpower.com or any website to verify that your PC can access the Internet.

3. **Verify power to the controller.** Check that the controller display is on or at least one LED on the controller is lit.

4. **Check the server connection on the generator set controller.** See Section 3.2.

- **RDC2/DC2 or VSC Controller.** Use the OnCue Toolbar Troubleshooting Option to verify that the controller is connected to the Kohler® OnCue server. See Section 2.13.3 for option selection procedure.

- **RDC/DC Controller.** Check the server connection LED on the generator set controller. See Figure 3-1.

   a. If the LED is not lit, there may be a problem with the generator set connection to the router or modem. Proceed to step 5.

   b. If the LED is lit, the problem may be in the PC connection to the OnCue server.

      OnCue may display the error message, "This application lost connection to the OnCue server."

      Check firewall TCP port 808. Verify that the router and PC firewall TCP port 808 is configured to permit an outbound connection. Refer to the instructions provided with the router or contact your ISP for assistance.

5. **Check the generator set connection to the modem/router.**

   Note: RDC2/DC2 or VSC controller. Disconnect utility power to the generator set before disconnecting the Ethernet cable. Follow the safety precautions in this document and in the generator set service manual.

   Note: RDC/DC controller. Remove the controller's F3 fuse and disconnect power to the generator set before disconnecting the Ethernet cable. Follow the safety precautions in this document and in the generator set service manual. See TT-1566, Ethernet Board Installation Instructions, for connection details.

   Isolate the problem by disconnecting the Ethernet cable from the generator controller and plugging it into a laptop PC.

   Disable wireless on the laptop. Check Internet access by trying to connect to www.kohlerpower.com or any other known website.

   a. If the computer cannot connect to the Internet, use a different cable to connect the laptop PC to the modem/router and try again.

   b. If there is no connection with either cable, the problem may be with the modem/router.

      - Verify that the modem/router has power and is on.

      - Contact your Internet Server Provider (ISP) for assistance.

   c. If the network cable is longer than 100 meters (328 ft.), install a repeater or switch.

6. **Check the information displayed in the Network Configuration and Network Status groups in OnCue®.** See Section 3.4. For these checks, if the PC does not connect to the controller over the Internet, it may be necessary to use a USB cable to connect the PC to the generator set controller.

If these procedures do not identify and correct the problem, contact the Generator Service Department for assistance.

3.6 Troubleshooting Chart

Figure 3-3 lists some common problems and suggested solutions.

Problem	Possible Cause	Suggested Solution
Connection problem (Also refer to the troubleshooting procedure in Section 3.5.)	Internet service is down	Verify that Internet service is available by navigating to www.kohlerpower.com or any website.
	No power to controller	Verify power to the generator set controller by checking that the controller display is on or one LED is illuminated or flashing on the controller. Check the connection to the generator set's engine starting battery. **RDC/DC controller.** Check the condition of the controller's F3 fuse, and replace the fuse if necessary.
	No connection to the server	**RDC2/DC2/VSC controller.** Test server connection using the OnCue® Troubleshooting Option to verify that the controller is connected. See Section 2.13.3. **RDC/DC controller.** Check that the server connection indicating LED on the controller is lit. See Sections 3.2 and 3.5.
	Cable or modem/router problem	**Note: RDC2/DC2/VSC controller.** Disconnect the utility power to the generator set before disconnecting the Ethernet cable. Follow the safety precautions in this document and in the generator set service manual. **Note: RDC/DC controller.** Remove the controller's F3 fuse and disconnect power to the generator set before disconnecting the Ethernet cable. Follow the safety precautions in this document and in the generator set service manual. See TT-1566, Ethernet Board Installation Instructions, for connection details. Isolate the problem by disconnecting the Ethernet cable from the generator controller and plugging it into a laptop PC. Disable wireless on the laptop. Check Internet access by trying to connect to www.kohlerpower.com or any website. ● If no connection, try to connect the laptop PC to the modem/router using a different cable. ● If there is no connection with either cable, the problem may be with the modem/router. Contact your Internet Server Provider for assistance.
	Long network cables may cause excessive signal loss	If the network cable is longer than 100 meters (328 ft.), install a repeater or switch.
	Password error	See Section 2.3. Reset the password at the controller, if necessary, and enter the new password in OnCue.
	Generator set serial number mismatch	See Section 3.3.
	Firewall blocking access	On the PC side, configure the router or PC firewall to open port 808. On the generator set side, configure the router firewall to open port 5253 to permit an outbound connection. Contact your system administrator or Internet service provider for assistance, if necessary.
	Network configuration problem	Check the Network Status group data in OnCue. See Section 3.4.
	Other	Contact your Internet Server Provider for assistance.

Problem	Possible Cause	Suggested Solution
Cannot update firmware	Wrong device selected in OnCue® (USB connection required)	Check for two devices for the same controller (serial number) in the OnCue navigation panel on the PC. The selected device is highlighted in the navigation panel. Click on the device with the USB connection to select it, and verify that the Update Firmware command is enabled (not grayed out).
	USB connection failed	Disconnect and reconnect the USB cable at the controller.
		RDC/DC only. Remove and replace the F3 fuse, located in the controller's service access area.
Cannot start an unloaded exercise	Exercise mode not enabled	Enable unloaded exercise mode in the ATS Exercise group. See Figure 2-17 on page 33.

Figure 3-3 Troubleshooting

Notes

Appendix A Abbreviations

The following list contains abbreviations that may appear in this publication.

A, amp	ampere
ABDC	after bottom dead center
AC	alternating current
A/D	analog to digital
ADC	advanced digital control; analog to digital converter
adj.	adjust, adjustment
ADV	advertising dimensional drawing
Ah	amp-hour
AHWT	anticipatory high water temperature
AISI	American Iron and Steel Institute
ALOP	anticipatory low oil pressure
alt.	alternator
Al	aluminum
ANSI	American National Standards Institute (formerly American Standards Association, ASA)
AO	anticipatory only
APDC	Air Pollution Control District
API	American Petroleum Institute
approx.	approximate, approximately
APU	Auxiliary Power Unit
AQMD	Air Quality Management District
AR	as required, as requested
AS	as supplied, as stated, as suggested
ASE	American Society of Engineers
ASME	American Society of Mechanical Engineers
assy.	assembly
ASTM	American Society for Testing Materials
ATDC	after top dead center
ATS	automatic transfer switch
auto.	automatic
aux.	auxiliary
avg.	average
AVR	automatic voltage regulator
AWG	American Wire Gauge
AWM	appliance wiring material
bat.	battery
BBDC	before bottom dead center
BC	battery charger, battery charging
BCA	battery charging alternator
BCI	Battery Council International
BDC	before dead center
BHP	brake horsepower
blk.	black (paint color), block (engine)
blk. htr.	block heater
BMEP	brake mean effective pressure
bps	bits per second
br.	brass
BTDC	before top dead center
Btu	British thermal unit
Btu/min.	British thermal units per minute
C	Celsius, centigrade
cal.	calorie
CAN	controller area network
CARB	California Air Resources Board
CAT5	Category 5 (network cable)
CB	circuit breaker
CC	crank cycle
cc	cubic centimeter
CCA	cold cranking amps
ccw.	counterclockwise
CEC	Canadian Electrical Code
cert.	certificate, certification, certified
cfh	cubic feet per hour
cfm	cubic feet per minute
CG	center of gravity
CID	cubic inch displacement
CL	centerline
cm	centimeter
CMOS	complementary metal oxide substrate (semiconductor)
com	communications (port)
coml	commercial
Coml/Rec	Commercial/Recreational
conn.	connection
cont.	continued
CPVC	chlorinated polyvinyl chloride
crit.	critical
CSA	Canadian Standards Association
CT	current transformer
Cu	copper
cUL	Canadian Underwriter's Laboratories
CUL	Canadian Underwriter's Laboratories
cu. in.	cubic inch
cw.	clockwise
CWC	city water-cooled
cyl.	cylinder
D/A	digital to analog
DAC	digital to analog converter
dB	decibel
dB(A)	decibel (A weighted)
DC	direct current
DCR	direct current resistance
deg., °	degree
dept.	department
dia.	diameter
DI/EO	dual inlet/end outlet
DIN	Deutsches Institut fur Normung e. V. (also Deutsche Industrie Normenausschuss)
DIP	dual inline package
DPDT	double-pole, double-throw
DPST	double-pole, single-throw
DS	disconnect switch
DVR	digital voltage regulator
E^2PROM, EEPROM	electrically-erasable programmable read-only memory
E, emer.	emergency (power source)
ECM	electronic control module, engine control module
EDI	electronic data interchange
EFR	emergency frequency relay
e.g.	for example (*exempli gratia)*
EG	electronic governor
EGSA	Electrical Generating Systems Association
EIA	Electronic Industries Association
EI/EO	end inlet/end outlet
EMI	electromagnetic interference
emiss.	emission
eng.	engine
EPA	Environmental Protection Agency
EPS	emergency power system
ER	emergency relay
ES	engineering special, engineered special
ESD	electrostatic discharge
est.	estimated
E-Stop	emergency stop
etc.	et cetera (and so forth)
exh.	exhaust
ext.	external
F	Fahrenheit, female
FHM	flat head machine (screw)
fl. oz.	fluid ounce
flex.	flexible
freq.	frequency
FS	full scale
ft.	foot, feet
ft. lb.	foot pounds (torque)
ft./min.	feet per minute
ftp	file transfer protocol
g	gram
ga.	gauge (meters, wire size)
gal.	gallon
gen.	generator
genset	generator set
GFI	ground fault interrupter
GND, ⏚	ground
gov.	governor
gph	gallons per hour
gpm	gallons per minute
gr.	grade, gross
GRD	equipment ground
gr. wt.	gross weight
H x W x D	height by width by depth
HC	hex cap
HCHT	high cylinder head temperature
HD	heavy duty
HET	high exhaust temp., high engine temp.
hex	hexagon
Hg	mercury (element)
HH	hex head
HHC	hex head cap
HP	horsepower
hr.	hour
HS	heat shrink
hsg.	housing
HVAC	heating, ventilation, and air conditioning
HWT	high water temperature
Hz	hertz (cycles per second)
IBC	International Building Code
IC	integrated circuit
ID	inside diameter, identification
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IMS	improved motor starting
in.	inch
in. H_2O	inches of water
in. Hg	inches of mercury
in. lb.	inch pounds
Inc.	incorporated
ind.	industrial
int.	internal
int./ext.	internal/external
I/O	input/output
IP	internet protocol
ISO	International Organization for Standardization
J	joule
JIS	Japanese Industry Standard
k	kilo (1000)
K	kelvin
kA	kiloampere
KB	kilobyte (2^{10} bytes)
KBus	Kohler communication protocol
kg	kilogram

kg/cm^2	kilograms per square centimeter
kgm	kilogram-meter
kg/m^3	kilograms per cubic meter
kHz	kilohertz
kJ	kilojoule
km	kilometer
kOhm, kΩ	kilo-ohm
kPa	kilopascal
kph	kilometers per hour
kV	kilovolt
kVA	kilovolt ampere
kVAR	kilovolt ampere reactive
kW	kilowatt
kWh	kilowatt-hour
kWm	kilowatt mechanical
kWth	kilowatt-thermal
L	liter
LAN	local area network
L x W x H	length by width by height
lb.	pound, pounds
lbm/ft^3	pounds mass per cubic feet
LCB	line circuit breaker
LCD	liquid crystal display
LED	light emitting diode
Lph	liters per hour
Lpm	liters per minute
LOP	low oil pressure
LP	liquefied petroleum
LPG	liquefied petroleum gas
LS	left side
L_{wa}	sound power level, A weighted
LWL	low water level
LWT	low water temperature
m	meter, milli (1/1000)
M	mega (10^6 when used with SI units), male
m^3	cubic meter
$m^3/hr.$	cubic meters per hour
$m^3/min.$	cubic meters per minute
mA	milliampere
man.	manual
max.	maximum
MB	megabyte (2^{20} bytes)
MCCB	molded-case circuit breaker
MCM	one thousand circular mils
meggar	megohmmeter
MHz	megahertz
mi.	mile
mil	one one-thousandth of an inch
min.	minimum, minute
misc.	miscellaneous
MJ	megajoule
mJ	millijoule
mm	millimeter
mOhm, mΩ	milliohm
MOhm, MΩ	megohm
MOV	metal oxide varistor
MPa	megapascal
mpg	miles per gallon
mph	miles per hour
MS	military standard
ms	millisecond
m/sec.	meters per second
mtg.	mounting
MTU	Motoren-und Turbinen-Union
MW	megawatt
mW	milliwatt
μF	microfarad
N, norm.	normal (power source)
NA	not available, not applicable
nat. gas	natural gas
NBS	National Bureau of Standards
NC	normally closed
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
Nm	newton meter
NO	normally open
no., nos.	number, numbers
NPS	National Pipe, Straight
NPSC	National Pipe, Straight-coupling
NPT	National Standard taper pipe thread per general use
NPTF	National Pipe, Taper-Fine
NR	not required, normal relay
ns	nanosecond
OC	overcrank
OD	outside diameter
OEM	original equipment manufacturer
OF	overfrequency
opt.	option, optional
OS	oversize, overspeed
OSHA	Occupational Safety and Health Administration
OV	overvoltage
oz.	ounce
p., pp.	page, pages
PC	personal computer
PCB	printed circuit board
pF	picofarad
PF	power factor
ph., ∅	phase
PHC	Phillips® head Crimptite® (screw)
PHH	Phillips® hex head (screw)
PHM	pan head machine (screw)
PLC	programmable logic control
PMG	permanent magnet generator
pot	potentiometer, potential
ppm	parts per million
PROM	programmable read-only memory
psi	pounds per square inch
psig	pounds per square inch gauge
pt.	pint
PTC	positive temperature coefficient
PTO	power takeoff
PVC	polyvinyl chloride
qt.	quart, quarts
qty.	quantity
R	replacement (emergency) power source
rad.	radiator, radius
RAM	random access memory
RBUS	RS-485 proprietary communications
RDO	relay driver output
ref.	reference
rem.	remote
Res/Coml	Residential/Commercial
RFI	radio frequency interference
RH	round head
RHM	round head machine (screw)
rly.	relay
rms	root mean square
rnd.	round
RO	read only
ROM	read only memory
rot.	rotate, rotating
rpm	revolutions per minute
RS	right side
RTDs	Resistance Temperature Detectors
RTU	remote terminal unit
RTV	room temperature vulcanization
RW	read/write
SAE	Society of Automotive Engineers
scfm	standard cubic feet per minute
SCR	silicon controlled rectifier
s, sec.	second
SI	*Systeme international d'unites,* International System of Units
SI/EO	side in/end out
sil.	silencer
SMTP	simple mail transfer protocol
SN	serial number
SNMP	simple network management protocol
SPDT	single-pole, double-throw
SPST	single-pole, single-throw
spec	specification
specs	specification(s)
sq.	square
sq. cm	square centimeter
sq. in.	square inch
SMS	short message service
SS	stainless steel
std.	standard
stl.	steel
tach.	tachometer
TB	terminal block
TCP	transmission control protocol
TD	time delay
TDC	top dead center
TDEC	time delay engine cooldown
TDEN	time delay emergency to normal
TDES	time delay engine start
TDNE	time delay normal to emergency
TDOE	time delay off to emergency
TDON	time delay off to normal
temp.	temperature
term.	terminal
THD	total harmonic distortion
TIF	telephone influence factor
tol.	tolerance
turbo.	turbocharger
typ.	typical (same in multiple locations)
UF	underfrequency
UHF	ultrahigh frequency
UIF	user interface
UL	Underwriter's Laboratories, Inc.
UNC	unified coarse thread (was NC)
UNF	unified fine thread (was NF)
univ.	universal
URL	uniform resource locator (web address)
US	undersize, underspeed
UV	ultraviolet, undervoltage
V	volt
VAC	volts alternating current
VAR	voltampere reactive
VDC	volts direct current
VFD	vacuum fluorescent display
VGA	video graphics adapter
VHF	very high frequency
W	watt
WCR	withstand and closing rating
w/	with
WO	write only
w/o	without
wt.	weight
xfmr	transformer

Notes

Notes

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